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An Argus Specialist Publication

Computing WEEKLY

45p

Win

No. 63
May 22-28, 1984

a 'flight' on a real simulator

WIN video tapes and learn about your computer from **MASTER CLASS**

FREE Spectrum screen designer

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RAM-saving graphics routines for CBM 64

Games to type in for: Spectrum, ZX81 and VIC-20

How to make your Oric/Atmos make music

PLUS: U.S. scene, news, letters, charts...

Two great FREE competitions



Battle begins over budget software

More budget-priced software has been launched, starting a three-sided battle for pocket money.

All three companies have a background in video film distribution and Mastertronic, which started the trend with a range at £1.99, reckons dealers have bought more than 1/4m tapes in less than seven weeks.

Now it has been joined by Advance Computer Entertainment and Atlantis Software.

ACE boss Micky Shephard first brought out his 10 titles at £6.90 — then dropped to £2.99 when he learned of Mastertronic's pricing.

He said: "We know them very well because we market video films to the same outlets. We could not drop to £1.99 and still re-invest. I would lose money."

"Without any bias, ours are far better than Mastertronic's. All our games will be new — we *Continued on page 5*

Moves to block piracy

Software duplication companies are intent on beating piracy and have released new systems which they hope will be foolproof.

Dataclone is marketing a loading system called Power Load, developed by Incentive Software, and Bibi Magnetics has a new technique called Imprint 2.

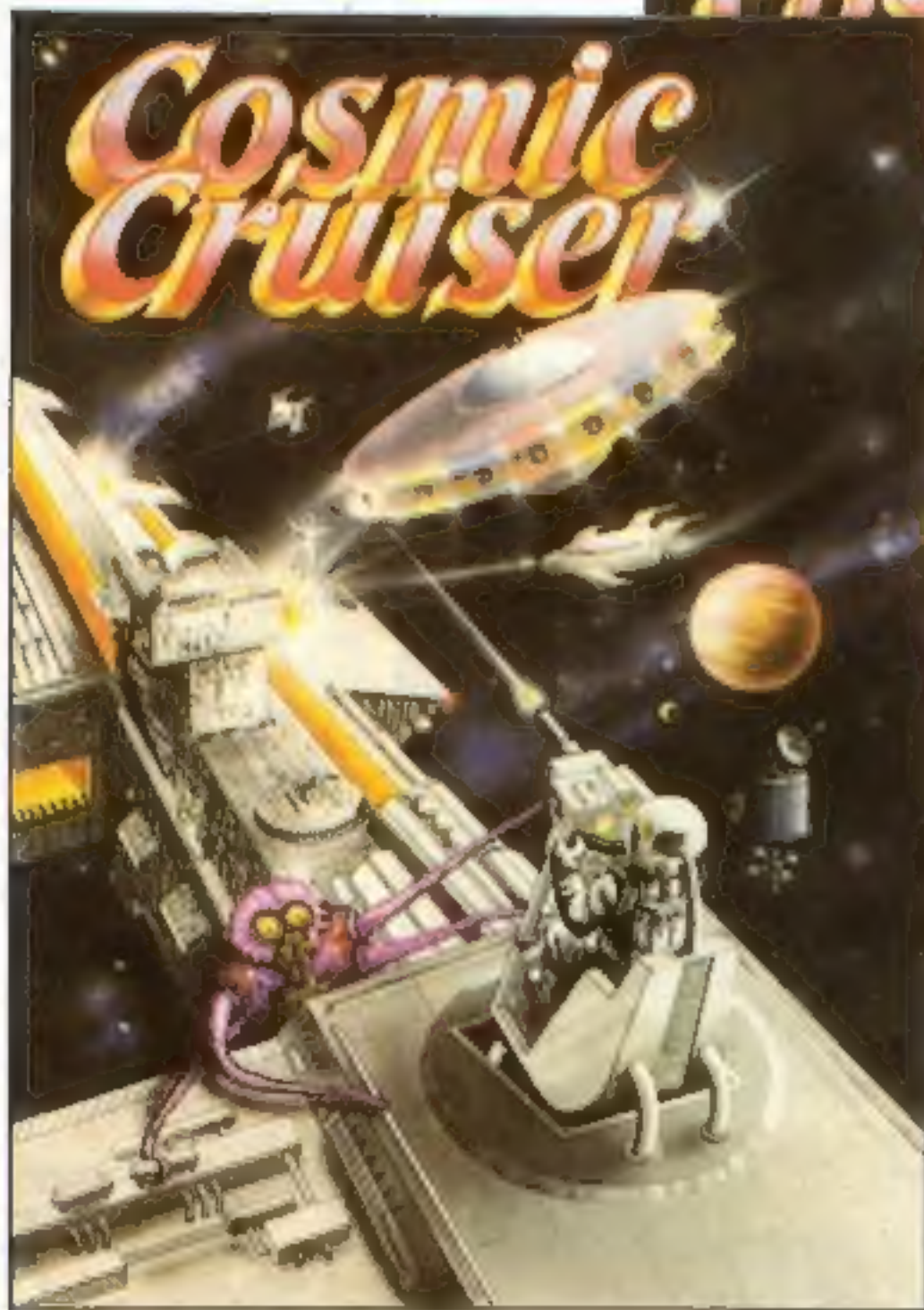
Dataclone's Power Load uses data compression techniques, reducing the loading time by more than twice. Mike Ferguson, mastering engineer, said: "At Dataclone we are in the business of copying software but this is uncopyable. I've tried my hardest and I can't break it. I have techniques which 99 per cent of the public wouldn't know about — and I can't crack it."

"I can get the headers in but that's as far as I can get. These tapes won't audio copy or machine copy. The technique is that it is on fastload. Tapes which would normally load in five minutes on the Spectrum *Continued on page 5*

...le bus software

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Commodore 64
BBC Model B
Dragon 32



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Home Computing WEEKLY

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SOFTWARE REVIEWS

Flex your muscles on these 10
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 New software for the Dragon assessed by our team

Take your pick 28
 Choose here for your ZX81, Spectrum or TI-99/4A

Back to school 31
 Will these help now you're back in class?

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 Games for BBC, Sord, Dragon/Tandy Colour

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 You could take to the "air" in a real flight simulator. There's 25
 Fighter Pilot tapes from Digital Integration for runners-up

Masterclass video tape competition 15
 Just watch and learn about computing on the Spectrum, VIC-20,
 BBC, Electron or Commodore 64. Thirty tapes must be won — and
 there's a 10 per cent discount voucher for every entrant

Spectrum screen planner 25
 Create great graphics and plot them on the screen with our special
 pull-out Pixel-Pad



• There's listings for these computers — and more — in this issue of Home Computing Weekly

PROGRAMS

ZX81 8
 Zap them before they blast us — a fast-moving space game for the 16K ZX81

Spectrum 12
 Two games: rescue a maiden in distress and go for gold in the 400 metres

VIC-20 16
 Two games: Galaxy is for the unexpanded VIC and Pilot 20 needs 3K expansion

Commodore 64 35
 RAM-saving graphics — five listings and four demonstration programs to type in and use

Oric/Atmos 42
 Type in our synthesiser and your computer is a musical instrument. And you can play back your masterpieces

<p>Editor: Paul Liptrot Assistant Editor: Liz Graham Designer: Bryan Pitchford</p>	<p>Managing Editor: Ron Harris Group Editor: Elspeth Joiner</p>	<p>Advertisement Manager: John Quinn Assistant Advertisement Manager: Stuart Shield</p>	<p>Divisional Advertisement Manager: Coleen Pimm Classified Advertising: Debra Stuppel Chief Executive: Jim Connell</p>
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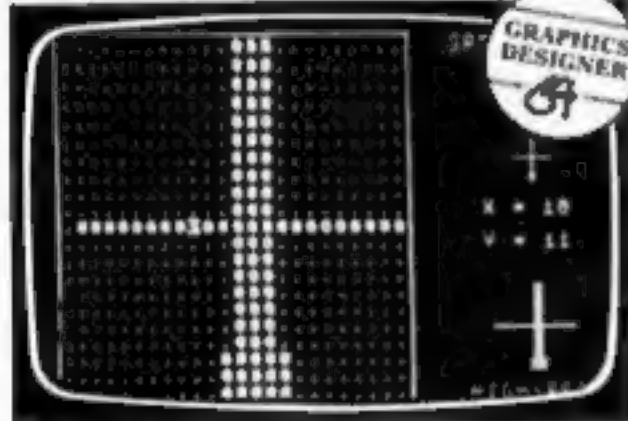
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Develop your programming skills with English Software.

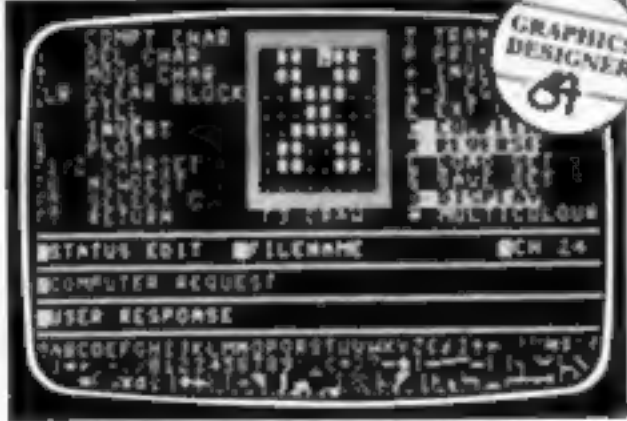
Here are five great titles to really help you enhance your programming abilities.



SPRITEMAKER 64 by M J Taylor

Design and save beautiful multi-coloured sprites, and then use them in your own programs. Full editing facilities under cursor control included. Saves files to cassette and disk.

ONLY £6.95



SUPERFONT 4.0 by Stephen A Riding

Our character generator lets you re-define and shape your own character sets. Full editing facilities under cursor control included. Saves files to cassette and disk.

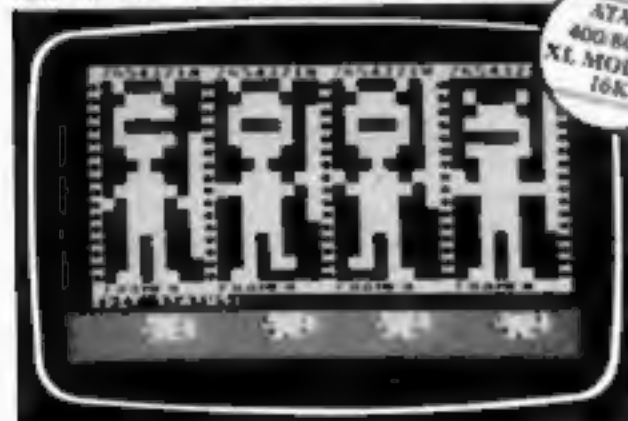
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ES FORTH by A Kozakewycz

ES Forth unlocks the door to the wonderful world of Forth at an affordable price! Up to 100 times faster than BASIC, yet easy to learn and easy to use. ★ Basic dictionary compatible with FIG-FORTH ★ Many general purpose extensions ★ Full screen editor ★ Complete set I/O extensions ★ Built in editor definitions ★ Use with Atari Assembler Editor for debugging and machine code linking ★ Sound commands ★ Atari Basic compatible graphics commands ★ Automatic control of Player-Missile graphics ★ Complete set of controller commands ★ User selectable number of editing screens.

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ATARI GRAPHICS WIZARD by Stephen A Riding

The Atari Graphics Wizard introduces you to the wonderful world of Atari Player (Sprite) and Character Graphics. Written totally in Machine Code, it contains Player Editor (Sprite Maker), Character Editor and Multicolour Character Editor. Operates via keyboard or joystick, full documentation supplied with each program. Soon, animated graphic capability will be at your fingertips!

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ACE, THE ATARI CASSETTE ENHANCER

by Jon Williams. Cassette features include: ★ Names cassette-saved programs. Searches and loads named program. ★ Displays contents of cassette on screen. ★ Verify facility. ★ Lists variables. ★ Automatic line numbering. ★ Renames any basic program quickly. ★ Creates binary files on tape. ★ Plus many, many more features. ★ Uses only 4K of memory maximum!

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(All English Software programs are sold according to the English Software Terms of Trading, copies of which are available on request.)

To the English Software Company, Box 43, Manchester M60 3AD

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- ES Forth at £14.95 ACE at £7.95 cassette.
 Atari Graphics Wizard at £9.95 Superfont 4.0 at £6.95
 Spritemaker 64 at £6.95 cassette (CBM 64) cassette (CBM 64)

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HCW63



THE POWER OF EXCITEMENT

You could be on our pages

We welcome programs, articles and tips from our readers. If you feel that your work meets our standards, please submit it to us for consideration for publication.

- Programs must always be sent on cassette. Listings are helpful, but not necessary. Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.
- Articles on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in HCW. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas, possibly with programming examples. We will convert any sketched illustrations into finished artwork.
- Tips are short articles, and brief programming routines. Your hints can aid other computer users.

All submissions will be acknowledged and the copyright in such works which will pass to Argus Specialist Publications Ltd will be paid for at competitive rates.

Keep a copy of your work and include an SAE. Label everything clearly and give a daytime and home phone number if you can. All work for consideration should be sent to:

Paul Liprot, Home Computing Weekly, No.1 Golden Square, London W1R 3AB

JLC. He was involved in the Ministry of Defence ban, and he certainly knows all about piracy.

"Imprint only works for cassettes, but we also have methods of protecting discs against piracy."

Number One Systems believe this program will be of interest to students and junior engineering staff. Versions are also available for the BBC B and Newbrain. Cost of cassette: £35.

Number One Systems, 9A Crown St, St Ives, Huntingdon, Cambs PE17 4EB

Circuit analyser

Just out from Number One Systems: Analyser for the 48K Spectrum. This is a program to evaluate the performance of electronic circuits, enabling the circuit designer to interactively improve them without having to bench test or breadboard.

Circuits of up to 16 nodes and 60 components can be analysed for input impedance, output impedance and gain at linearly or logarithmically spaced functions.

Modifications can be made to

Datonne, Unit 1, Roslin Square, Roslin Rd, London W3 8DH; Bibi Magnetics, Field Way, Greenford Industrial Estate, Greenford, Middx UB6 8UN

Battle

From front page

won't re-package old stuff. We don't want to be in that area. There's an old adage that you only get what you pay for."

He said his range — which would increase by 10 next month — was prepared by Galactica Software, run by Richard Darling and sons Richard and David.

Mr Shephard said: "This summer we believe there's going to be a big price drop generally to around £3.50-£3.99.

"The industry has got its head in the sand. They are making too much product and there are not enough customers. It's the cart before the horse."

He said he had done 10 times the business in seven days, compared with the previous three weeks, since his price cut.

Atlantis Software was bringing out its first four titles this week, all at £1.99, with another four within a month.

Managing director Mike Cole said: "We decided to market some games cassettes and we thought there was something that was not quite right with the market. There are about 2 1/2m computers but the average game sells 3,000 to 5,000, although the biggies sell more. Then we looked at the prices and it seemed that pocket money prices were the way to do it. Mastertronic did their maths the same way.

"All our software is from well respected software houses. They have not been published before and they are not second-rate games. Originally we were going to market them at £5.95 to £6.95."

Alan Sharam, of Mastertronic, said: "We have established ourselves and the games are selling, but we are not complacent. And any suggestion that we are coming in to slaughter the software market is nonsense."

Nick Alexander, chairman of the Guild of Software Houses and managing director of Virgin Games, said he felt that the market was not yet big enough for budget priced software.

He said: "They have got to sell a lot of the sums just don't add up.

"I feel that there's no reason why full price and budget price software shouldn't sell side by side. There is a big danger, however, that people will over-react and pull down their prices. The video and the record industries learned that mistake to their cost."

All three of the new software

Piracy

From front page

companies are selling direct to people. Most outlets are the estimated 14,000-16,000 video film rental shops, but others include petrol stations, newagenis and grocers. Conventional software distributors and the big high street chains were also taking an interest, they said.

Mastertronic, 42 Welbeck Street, London W1M 7HF

Advanced Computer Entertainment, 82-84 Peckham Rye, London SE15 4HB

Atlantis Software, 19 Prebend Street, London N1 8PF

of the time."

Bibi Magnetics' new way to beat the pirates, Imprint 2, is a technique added to the master before duplication. No dongle or other hardware is necessary.

Nigel Boyle, sales manager for data duplicating, said: "There has been a lot of talk about how much income is lost through piracy. Opinions vary, but it is true that there is a significant loss through piracy. No-one will eradicate piracy, but we aim to help.

"Imprint 2 will stop the schoolkid who makes 10 copies for a friend, who then makes 10 more for another friend. Before you know it there are thousands of illegal copies. Professional pirates will also find it hard to get round this imprint technique, as each cassette will need the imprint.

"It will work on all computers on all cassettes. The price of software to the customer should not go up noticeably, unlike cassettes using the dongle. The cost to the software companies will be minimal."

Mr Boyle said: "This is the brainchild of Jim Lamont of

Learning is fun

Play and learn with Clever Clogs, those five pre-teen cousins who have recently linked up with Argus Press Software. Two new games have just been released: Star Trucker for age 9+ and Music for 7+.

Space Trucker: your mission is to reach beyond hyperspace and bring back power crystals. You must answer questions correctly in order to be able to buy fuel and commodities or increase the Force Field. Your aim is to fulfil your task in the shortest possible time — then you can print out a Space Commission certificate if you are successful.

Music: This package is three tapes in one — Piano Player, Composer and Musical Quiz. The program can be updated or the difficulty level increased.

Argus Press Software, No. 1 Golden Square, London W1R 3AB

Play and learn

New from Comsoft: Staircase Stampede, for the BBC 32K micro. Humphrey struggles to paint the staircase while being pursued by Horrible Harold and Helpful Horace. Watch out for exploding bombs or crushing boots! Cassette costs £7.50; 40 track disc £9.50.

Also from Comsoft for the BBC 32K and Electron: Playbox, a combination of three programs on one tape. Memory is a game for two, in which you must pair off a series of pictures; Hangman has a vocabulary of 280 words and Bricksmash keeps you trapped behind a brick wall until you can break out by answering the general knowledge questions.

Price for this package is £6.50 for cassette and £8.50 for 40 track disc.

Comsoft, 7 Roman Drive, Leeds, West Yorks LS8 2DR

Fantasy fun

The Lords of Midnight is a new game from Beyond for the 48K Spectrum. Described as "a living fantasy novel," it's an epic game which has similarities to the Lord of the Rings.

You may use your Spectrum printer to print out a pictorial record of the game, and Beyond is offering to turn the adventures of the first successful candidate into the first ever computer-generated novel. Price £9.99.

Beyond, Durrant House, 8 Herbal Hill, London EC1R 5EJ

Mammoth micro shop

What is reputed to be the world's largest computer store has opened in London, at Stonebridge Park on the North Circular. Steiger has dedicated 25,000 square foot of floor space to home and business computers. Software is also catered for; both educational and games packages are sold at competitive prices.

John Patterson, director, said: "For the first time customers have got everything they need under one roof, from the smallest computer to a dedicated multi-user system."

He continued: "We support our products with skilled, trained people. Our programme of after sales support and maintenance is second to none. Our long-term aim is to open a chain of Steiger-owned or franchised shops and achieve nationwide coverage."

● As an introductory offer, Steiger is deducting up to 20 per cent from an Apple system, and permitting a seven-day free trial.

Steiger House, North Circular, Stonebridge Park, London NW10 7QZ

Face foes, rescue maidens!

Four more games and one utility are just out from English Software for Atari, each costing £9.95. In the Adventures of Robin Hood, foil the Sheriff of Nottingham, steal the silver and rescue Maid Marian!

Brian the Blob has stolen the great Diamond and hidden it in the deepest vault. In Dan Strikes Back, you must make your way through the vault, avoiding the creatures and trampling on the mushrooms.

Citadel Warrior 32K is a game in which your mission is to save the world from evil forces, set on destroying security citadels with their cyclotron bombs. Neptune's Daughters is an original game in which the Sea Serpent seizes Neptune's beautiful daughters and carries them off to his lair. Your task is to brave the Sea Serpent and rescue the maidens.

Atari Graphics Wizard enables you to create new characters and edit and create players (sprites) at the same time. It eliminates the need for a separate player and character editor.

English Software, Box 43, Manchester M60 3AD

Cut-price CBM 64 music box

My attention is drawn most readily to programs having to do with music. Therefore, I was attracted to the announcement by Human Engineered Software (HES) of its latest product for the Commodore 64. It is called Synthesound 64. As you may know, the 64 has a chip inside it called SID (for Sound Interface Device) that is capable of producing all sorts of neat noises.

Unfortunately, it was designed to be PEEKed and POKEd from BASIC, which is a very tedious, not to mention time consuming and technical, way of getting the job done. In this manner it usually takes hours to design tunes that play for seconds. But that is all over now. Using the HES program, you no longer have to be a programming genius to get fantastic results. You will need some specialized knowledge of musical synthesizers, but that knowledge is passed along to you by the program itself, which in addition to being useful is also educational.

The program teaches all about the common electronic music buzzwords and acronyms, as well as teaching about the limitations and capabilities of the SID chip. The program allows the creation of up to eight low frequency oscillators, two piano-style keyboards displayed on the screen, is able to store and recall up to 256 predetermined pitch settings, and uses the disc drive as a "tape recorder" on which you can store as many as nine tunes and nine sets of 256 predetermined settings. A sample demo is included with the program which shows off its tremendous capabilities.

Among other things, the program is capable of producing three-note chords, something which, until very recently, all except the most expensive music synthesizers were not capable. Even at present, the most reasonable priced three-voice synth costs lots more than a CBM 64 system. It is also possible to match the pitch of the unit to other instruments by using the left and right arrow keys to increase or decrease the pitch in gradual increments — while playing in real time!

The program does have some limitations of which you should be aware. Its error handling is less than superb and occasionally the keyboard will go dead, requiring a complete reboot. Since the keyboard is used for entering the notes, it is obviously not going to be played as efficiently as a real keyboard instrument, nor is the sound going to resemble that produced by a commercial-grade synth. Still, no other special hardware is required to produce music, and there seems to be no other place you can learn so much about electronic music for such a low price.

The program costs all of \$19.95! If unavailable from your local HES dealer, you can enquire directly to Human Engineered Software, 150 North Hill Drive, Brisbane 94005, (415) 468-4111.



Hands Across The Water Dept. Our GTE (General Telephone and Electronics) Telenet Communications and British Telecom have just announced a jointly developed system of transmitting telex messages faster and cheaper. The new service does not require any specialized telex equipment other than standard terminals and micro computers — or even dedicated word processors — in order to send messages to the U.K. The system is called Interstream One, and will reduce the cost of standard telex communications from \$2 or \$3 per minute to as low as 17 cents per minute plus .08 cents for every 400 characters transmitted. Say, that's a more efficient way of getting my column to you...

No more space now. See you next week.

Bud Izen
Fairfield, California



Come fly with us

FASTEN your seat belt and prepare for take off!

This is your chance to win a once in a lifetime trip. However, you won't be going anywhere — you'll just think you are. Rediffusion simulators make you think you're flying while you stay in the same place.

Be the envy of your friends when you take a ride in a simulator in which civilian and military pilots train.

You'll travel to Rediffusion's head offices in Crawley, near Gatwick. You must be 10 or over and accompanied by an adult. Home Computing Weekly will pay for your travel expenses.

Rediffusion Simulation is the largest simulator products manufacturer in Europe. The aim of flight simulators is to create a realistic environment so trainee pilots can learn through practice. The flight deck has authentic instruments. A computer creates lifelike scenes.

You can choose your weather — snow, ice, rain, thunder or make it easy and go for fine weather — as well as time of day or night.

Each of Rediffusion's simulators costs £5m and there is a comprehensive range from BA146 to Boeing 747.

As a lasting souvenir of this memorable and exciting day out, Rediffusion will send you a photograph of yourself in control of your aircraft.

Additional prizes to keep you air-bound are 25 cassettes of Fighter Pilot from Digital Integration for the 48K Spectrum. Usual price: £7.95.

Transform your front room into a simulator as you play this real time game. Based on the USAF jet fighter, the F15 Eagle, the 3D graphics give you the illusion of reality.

The creator of Fighter Pilot, Dave Marshall, is an expert — he's a former Ministry of Defence pilot and he's flown Hunters and Jet Provosts, so he's got inside knowledge.

So what are you waiting for? The competition is as straightforward as all the previous ones. Don't forget to write your age on your entry coupon.

How to enter

Hidden in the wordsquare are a number of aeronautical terms. Look closely and try and find as many terms associated with aircraft as possible. Mark these words with a ballpoint or semi-opaque felt-tip pen. Complete the coupon fully and clearly — if you are a winner it will be used as a label — and send the wordsquare and coupon to us.

Important: you must write on the back of the envelope the number of terms you found. Don't forget to write your age on the coupon.

You may enter as many times as you wish provided each is on the official wordsquare and coupon and in a separate envelope. Copies will not be accepted. Please do not enclose anything else.

Send your entry to Simulator Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB.

Closing date is at first post on Friday June 8, 1984. The top prize, a ride in a Rediffusion simulator, will be awarded to the sender of the first correct entry opened at random. Runners-up will be the senders of the next 25 correct entries opened at random; they will receive a copy of Fighter Pilot from Digital Integration for the 48K Spectrum.

The winner of the simulator prize must be accompanied by an adult companion. The trip to Rediffusion offices in Crawley will be on a date convenient to Rediffusion. Home Computing Weekly will cover surface travel expenses from a mainland U.K. address.

Software will arrive from Digital Integration within 28 days of the results appearing in Home Computing Weekly, or earlier.

This competition is restricted to entrants over the age of 10.

The rules

Entries will not be accepted from employees of Argus Specialist Publications, Rediffusion Simulation, Digital Integration and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies. The rules include the guidance in the How to Enter section. The editor's decision is final and no correspondence will be entered into.



A	U	G	S	I	M	U	L	A	T	O	R	C	B	H	B
F	N	D	J	Z	E	C	D	I	L	A	J	M	D	I	F
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Simulator Competition

Entry Coupon

Name _____

Address _____

_____ post code _____

Age _____ Number of titles found _____

Complete clearly and fully — if you are a prizewinner this will act as a label. Post to Simulator Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Closing date: first post, Friday June 8, 1984. Follow carefully the advice in the How to Enter section, including writing the number of titles you found on the back of the envelope.

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1 REM "ALIEN"
2 GOSUB 5900
3 DIM A(21,31)
4 LET LIVES=159
5 DIM A(5)
6 DIM A$(2,3)
7 LET A$(1,1)=" "
8 LET A$(1,2)=" "
9 LET SCORE=0
10 LET N=16
11 LET S=" "
12
13
14 LET U=20
15 LET W=0
16 FOR X=0 TO 21
17 PRINT AT X,0;S$
18 NEXT X
19 FOR D=1 TO 5
20 LET A(D)=D*5
21 PRINT AT 3,D+5;A$(1);AT 4,D
22 *5;A$(2)
23 NEXT D
24 PRINT AT 0,0;"HI-SCORE="
25 BY>
26 PRINT AT 10,2;" "
27 ;AT 10,2;"SCORE=";AT 10,2;" "
28 ;AT 10,2;" "
29 ;AT 10,2;" "
30 ;AT 10,2;" "
31 PRINT AT 21,16;CHR$ LIVES;A
32 T 0,0;HISCORE;AT 0,19;F$
33 FOR S=1 TO 27 STEP 3
34 LET R(10,S)=2
35 LET R(12,S+1)=2
36 LET R(12,S+2)=2
37 LET R(12,S+3)=2
38 LET R(8,S+3)=2
39 LET R(14,S)=2
40 LET R(14,S+1)=2
41 LET R(8,S+2)=2
42 NEXT S
43 FOR S=1 TO 27 STEP 3
44 PRINT AT 10,S;" "
45 ;AT 12,S+
46 ;" "
47 ;AT 14,S;" "
48 ;AT 8,S+2;" "
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81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100 PRINT AT 5,3;" "
101
102
103
104
105 PRINT AT 21,15;" "
106 ;AT 21,17
107 " "
108
109 LET B=INT (RND*5)+1
110 IF A(1)=0 AND A(2)=0 AND A(
111 3)=0 AND A(4)=0 AND A(5)=0 THEN
112 GOTO 1000
113 IF A(B)=0 THEN GOTO 110
114 PRINT AT 5,B+5;" "
115 FOR I=0 TO 10
116 NEXT I
117 FOR M=0 TO 30
118 LET Z=Z-(INKEY$="0")+ (INKEY
119 $="D")
120 LET V=V-1
121 LET P=R(V,Z)
122 PRINT AT V,Z;" "
123 IF P=2 THEN GOTO 360
124 PRINT AT V,Z;" "
125 ;AT V,Z;" "
126 IF V=6 AND Z=8*5+1 THEN GOT
127 0 300
128 IF V=6 THEN GOTO 325
129 NEXT M
130 PRINT AT 3,Z-1;" "
131 ;AT 4,Z
132 " "
133
134 LET A(B)=0
135 LET SCORE=SCORE+500
136 LET SCORE=SCORE+500
137 LET Z=16
138 PRINT AT 10,3;SCORE
139 LET V=20
140 GOTO 100
141 LET LIVES=LIVES-1
142 FOR Q=0 TO 8
143 PRINT AT V,Z;CHR$ Q;AT 21,1
144 5;CHR$ (Q+128)
145 NEXT Q
146 LET Z=16
147 PRINT AT 21,16;CHR$ LIVES
148 IF LIVES=156 THEN GOTO 396
149 LET V=20
150 GOTO 45
151 FOR S=0 TO 21
152 PRINT AT 5,0;S$
153 410 PRINT AT 10,10;"GAME OVER";
154 AT 10,10;" "

```

Oh no! The unthinkable has happened. Your 16K ZX81's ground pilot has gone berserk and has left you, the only known sane survivor, to fight off the intergalactic aliens.

What's worse is that he has caused catastrophe in the missile launching room and has put you into auto-launching mode.

reach scores in the region of 15-25,000.

The game can be made to run slightly faster by omitting line 210.

To make the game easier, less barricades should appear. In order to do this, omit lines 33-38 and amend line 46 to:

How it works

- 2 GOSUB for instructions
- 3-16 set up main variables
- 17-20 print inverse screen
- 25-28 print aliens and record their positions
- 29-31 print score, lives etc
- 32-44 record barricades positions
- 47 print barricades
- 100-140 print opening under alien
- 150-230 main loop
- 300-320 alien destroyed
- 325 reached alien but not destroyed
- 326-355 print score and initialise missile positions
- 360-369 lose life routine
- 396-1200 game over routine
- 1210-1290 high-score routine
- 5900-6050 print title in large letters
- 6060-9179 initialise high score variables and print instructions
- 9900-9935 print wait routine

Main variables

- RB (x,y) screen dimension
- lives lives (in inverse)
- A vertical alien positions
- Z,V vertical, horizontal missile position
- B opening under alien position
- F\$ high scorer's name

```

PRINT AT 14,S;"(2 GRAPH-
ICS H)"; AT 8,S+2;"(2
GRAPHICS H)"

```

Words in inverse are 410 GAME OVER, 600 SCORE=, 758 YOU HAVE EQUALLED TODAY'S H1-SCORE **WELL DONE**, 1210 YOU HAVE GAINED TODAY'S H1-SCORE **CONGRATULATIONS**, 1222 TYPE IN YOUR NAME.

The game can be SAVED by typing GOTO 1400.

Your only hope is to steer the missiles at the aliens.

Easy, you may think. It's not if their targets are at the other side of reinforced, indestructible barricades. Full instructions are in the listing.

When you have mastered the game you should be able to

Hints on conversion

The game should not present too many difficulties to convert to other computers. The only major difference is the ZX81's character set; CHR\$ 159 is inverse S, CHR\$ 156 inverse O, CHR\$ 118 newline (return), CHR\$ 128 onwards graphics characters.

```

420 NEXT S
500 PRINT AT 10,10;" "
600 PRINT AT 12,6;"SCORE=";SCO
RE
601 PRINT
758 IF SCORE>HISCORE THEN GOTO
1210
758 IF SCORE=HISCORE THEN PRINT

```

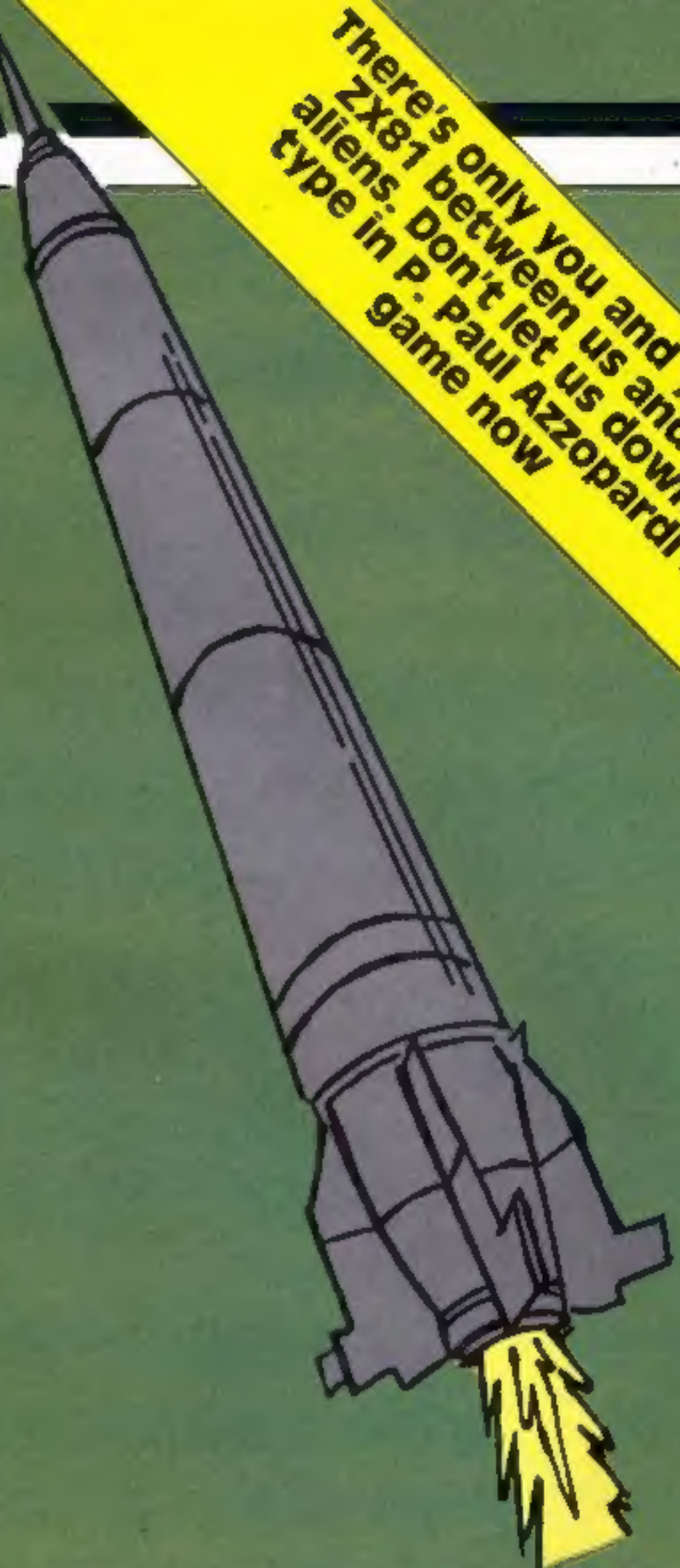
Zap before blast


```

YOU HAVE EQUALLED TODAY'S HI-SCORE
DORE = +WELL-DONE+
750 GOSUB 9900
900 GOTO 3
1000 LET LIVES=159
1100 LET SCORE=SCORE+1000
1200 GOTO 14
1210 PRINT "YOU HAVE GRINED TODAY"
HI-SCORE +CONGRATULATIONS
1220 PRINT "-----"
1221 PRINT
1222 PRINT "-----"
1230 LET F$=""
1235 FOR O=11 TO 16
1236 IF INKEY$("<") THEN GOTO 1236
1237 IF INKEY$="" THEN GOTO 1237
1240 IF INKEY$=CHR$ 116 THEN GOT
O 1270
1245 LET X$=INKEY$
1249 PRINT AT 16,0;X$;
1250 LET F$=F$+X$
1250 NEXT O
1270 LET HISCORE=SCORE
1290 GOTO 750
1300 STOP
1400 SAVE "ALIE"
1500 RUN
5900 PRINT AT 3,4; "-----"
6000 PRINT AT 4,4; "-----"
6010 PRINT AT 5,4; "-----"
6020 PRINT AT 6,4; "-----"
6030 PRINT AT 7,4; "-----"
6040 PRINT AT 8,4; "-----"
6050 PRINT AT 9,4; "-----"
6060 GOSUB 9900
6070 CLS
9000 PRINT TAB 11;"ALIEN";TAB 11
9010 GOSUB 9932
9110 PRINT " YOU HAVE TO ST
EER YOUR MISSILE (M) PAST THE B
ARRICADES (■) AND THEN INTO O
NE OF THE FIVE ALIENS WHICH ARE
WAITING ON THE TOP OF THE
SCREEN."
9112 GOSUB 9932
9115 GOSUB 9900
9116 GOSUB 9932
9120 PRINT " IF THE ALEIN IS
ACTIVE YOU GET 1000 POINTS AND I
T BLOWS UP. (YOU WILL KNOW IF
THE ALIEN IS ACTIVE OR NOT BECA
USE IT WILL HAVE AN OPENING AT
THE BOTTOM)."

```

them
e they
US...



There's only you and your 16K
ZX81 between us and the
aliens. Don't let us down —
type in P. Paul Azzopardi's
game now

```

9130 PRINT " AN ALIEN WILL ONLY
STAY ACTIVE FOR A FEW SECONDS.
IF YOU DON'T MANAGE TO HIT AN A
CTIVE ALIEN YOU WILL GET 500 P
OINTS."
9135 GOSUB 9932
9136 GOSUB 9900
9137 GOSUB 9932
9140 PRINT " YOU HAVE 3 LIVES
AND YOU LOSE 1 EACH TIME YOU HIT
A BARRICADE."
9170 PRINT " KEYS : Q MOVES LEF
T ; TAB 7; P MOVES RIGHT"
9172 GOSUB 9932
9175 GOSUB 9900
9176 LET HISCORE=0
9179 LET F$="???????"
9180 RETURN
9900 PRINT AT 16,3; "←-PRESS A →E
N TO CONTINUE-"
9902 FOR W=0 TO 5
9903 NEXT W
9905 PRINT AT 16,3; "←-PRESS A KE
Y TO CONTINUE→"
9910 IF INKEY$="" THEN GOTO 9900
9920 CLS
9930 RETURN
9932 PRINT
9933 PRINT
9934 PRINT "-----"
9935 RETURN

```

Croakit 32K BBC £5.95

Kerian, 29 Gisburn Rd, Hessle, Hull HU13 9HZ

There has to be a limit to the number of versions of a single game the market can stand and in the case of Frogger I'm sure we must have reached it by now! I was somewhat taken aback therefore to receive this one for review.

It is a perfectly reasonable version with most of the features you expect: interrupt driven music routines, smooth animation and a reasonable playing speed, although I prefer the fastest version available (Croaker).

Snakes, flies, lady frogs and crocodiles all have their

particular rewards or punishments in store for you. There are a few features which do make this stand out from the crowd, although I don't feel they are improvements. The frog does not change attitude when you change direction, there is only ever a forward facing frog on screen, there are two rows of logs both moving in the same direction and there can be more than one fly on the screen at once.

Rather too late to catch a mass market and not the best available I'm afraid.

instructions	50%
playability	60%
graphics	75%
value for money	60%



Rocky 32K BBC £7.95

Superior Software, Dept C, Ground Floor, Regent House, Skinner Lane, Leeds

This game has nothing to do with boxing!

Instructions are given during the loading process and are quite adequate. A nice extra is the revolving score table, on which you can see your name spin round, if you're good enough!

The major setback of the game is that the graphics are small. The small characters make the game appear to be really fast.

You have to kill the mutant robots by dropping rocks on them. They have one large eye which emits a yellow beam of light. If you're caught in this,

your strength is sapped and if you're not carrying a rock the mutant will metamorphosise into a cruncher or spectre.

The game is situated in a maze. Two separate keys are used to pick up rocks and drop them. This makes the game very difficult. Some of you 'wonder players' out there may be able to pick up this sort of game with no problem, but slow people like myself would have great difficulty.

£7.95? Well, I wouldn't buy it.

instructions	80%
playability	50%
graphics	90%
value for money	60%



Bumble Bee BBC B £7.95

Power, 8/8a Regent St, Chapel Allerton, Leeds LS7 4PE

If you like chasing and BEEing chased around mazes then this is for you. Not particularly original but certainly inventive.

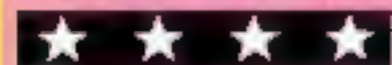
It's based on a similar idea to Pac-man. You are a bee wandering around eating pollen and occasional fruit. However all is not rosy in the garden. There are hazards to watch out for. Roadstools and tasty looking foodstuffs are poisoned. Worsel Spiders appear to chase and devour you. However, there are some tricks in your favour if your reactions are fast enough.

Parts of the maze contain swinging gates which can guard your escape. Spiders can be lured to eat the food and so die!

It's an extremely colourful game with excellent graphics. There is a useful sound on/off option which meant I could play late into the night and a high-score table to satisfy the competitive player.

My only problem was with the choice of keys for movement — the asterisk and question mark were not a good idea for up and down. There is a joystick option which made it slightly easier although changes of direction were still tricky.

instructions	90%
playability	80%
graphics	95%
value for money	80%



Flex your muscles on these!

Escape from Colditz, hurl boulders at robots and chase round mazes! Our reviewers have cooled down enough to tell you how they rated these active games

Planetfall 32K BBC £11.95

Argus Press Software, No.1 Golden Square, London WC2

This trading game is brought to you by the publishers of this magazine. You may be somewhat sceptical therefore when I describe it as one of the best trading type games I have seen for the BBC. My main reason is not that I like working here but that it is the most understandable trading game I have played, with simple rules but interesting and lively action.

The program has 11 different screen displays, all attractively laid out in teletext with plenty of colour and sound. You have many options and can alter skill

levels and time span.

You pilot a cargo ship around the galaxy buying and selling as you go and at each stop you have the chance to haggle over the prices. For anyone with a passion for games playing it will be a wonderland.

The only difficulty I have had is trying to get to the bank as the instructions don't give enough detail on this aspect. An exciting two- or more player game which is a little overpriced but good fun.

instructions	70%
playability	95%
graphics	80%
value for money	80%



Colditz 32K BBC £8.65

LVL, Electron House, Bridge St, Sandiacre, Notts

A nice extra here is a sheet explaining how to run this program with a 0.10 operating system. The loading instructions are very clear and a 16-page booklet is included.

As you may have guessed, Colditz involves you escaping from the German POW camp. The screen displays a map of the level you are on. Using the cursor keys you can move around searching for escape routes and equipment.

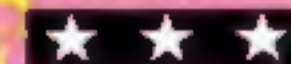
A door which is normally closed has a German guard outside. If you show him your pass, you may enter. Other doors need keys.

There are eight escape routes, the most obvious being through the drains. When you have collected five essentials, (e.g. compass) you can escape. However, trying to leave the prison with the wrong equipment leaves you with 30 days in the cooler. This is equivalent to a new start.

Of course it's not that easy. Occasionally an *appel* is called, and if you are caught for not appearing or you arrive with escape equipment you're in the cooler.

Two word commands are used and they can't be abbreviated: a lot of typing.

instructions	95%
playability	80%
graphics	50%
value for money	70%



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PLEASE SEND FOR FURTHER DETAILS ON YOUR
NAME _____
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Listing for Beauty and the Beast

```

1 GO SUB 90: BRIGHT 1: INK 5: BORDER 0: PAPER 0: PRINT AT 10,0: FLASH 1: "BEAL
TV AND THE BEAST": AT 12,13: FLASH 0: "BY": AT 14,0: FLASH 0: "SAMEER SHETH": LET 0=
0:
2 PRINT AT 20,0: FLASH 1: "PRESS ANY KEY TO CONTINUE": PAUSE 0: C PRINT 0
-LEFT": PRINT "P RIGHT": PRINT "O UP": PRINT "A DOWN": PRINT AT 1,0: PRESS ANY
KEY TO START":
3 PRINT AT 5,0: "THE OBJECT OF THE GAME IS TO RESCUE THE PRINCESS BEFORE TH
E HEAVY LOAD, WHICH THE BEAST HAS DROPPED FLATENS HER
4 PRINT AT 10,0: "HOWEVER THIS CAN ONLY BE DONE BY FIRST FETCHING THE ROSES
": AT 13,0: "WATCH OUT FOR THE THORNS."
5 PRINT AT 15,0: INK 4: "P": INK 5: "ROSE": PRINT PRINT INK 4: "O": "THORN

PRINT : PRINT INK 7: "Q": INK 5: "THORN": PAUSE 0: CLS
6 LET t=0: INK 5: GO SUB 150
7 LET k=0: LET l=20
8 FOR x=0 TO 20 STEP 2: PRINT AT 1,4: INK 7: " " AT x+1,4: " ": NEXT x
10 LET a=1
20 PRINT AT a-1,0.
21 PRINT AT k,1: INK 5: "E
22 IF INKEY$="p" THEN LET l=l+1: INK 4: "P": AT x+1,4: " ":
23 IF INKEY$="o" THEN LET l=l-1: PRINT AT l+1,1.
24 IF INKEY$="d" THEN LET k=k+1: PRINT AT l+1,1:
25 IF INKEY$="a" THEN LET k=k+1: PRINT AT k-1,1:
26 IF ATTR (k,1)=68 THEN BEEP .008,20: BEEP .008,14: GO TO 400
27 IF ATTR (k,1)=70 THEN BEEP .08,10: BEEP .08,14: LET 0=0+100: IF 0=100 THE
N 1,5: RESTORE 1 GO TO 6
28 IF ATTR (k,1)=71 THEN BEEP .08,10: BEEP .08,10: GO TO 400
29 IF ATTR (k,1)=66 THEN BEEP .0,10: LET t=t+1: LET 0=0+10
30 IF ATTR (a+1,1)=70 THEN BEEP .08,10: BEEP .08,14: BEEP .08,10
31 PRINT AT a,0: INK 7: " "
32 PRINT AT a+1,0: INK 7: " "
33 PRINT AT 19,1: INK 6: "Q": AT 20,1: INK 6: " "
34 LET a=a+1
35 PRINT AT 0,1: INK 7: BRIGHT 1: CLS
40 IF a>19 THEN PRINT AT a,0:
41 IF a>19 THEN PRINT AT a+1,0: GO TO 10
44 IF ATTR (a,1)=70 THEN PRINT AT a-1,0: AT a,0: INK 7: " " AT a+1,0:
I
N) 3: " " PRINT AT 10,0: FLASH 1: "SEAT": GO TO 400
50 IF t=4 THEN GO SUB 1000
51 IF l=0 THEN LET l=0
52 IF l=31 THEN LET l=31
53 IF k=0 THEN LET k=0
54 IF k>21 THEN LET k=21
70 GO TO 20
90 FOR q=0 TO 0
99 READ sf
100 FOR z=0 TO 7
111 READ a
112 FOR e USR sf+z,a
114 NEXT z
115 NEXT q
116 RETURN
150 FOR n=0 TO 50: PRINT AT RND*20,RND*25+(+5): INK 4: "P":
200 NEXT n
170 FOR n=0 TO 3: PRINT AT RND*20,RND*20+15: INK 5: "O": NEXT n
300 RETURN
400 PRINT AT 10,10: INK 7: FLASH 1: "YOUR SCORE: ",0: "TOP
500 DATA "q",192,224,248,253,254,252,248,19.
400 DATA "a",192,192,192,192,192,192,192,19.
200 DATA "p",8,8,28,56,60,254,BIN 01111100,25
000 DATA "h",255,BIN 00111100,BIN 00111100." H N 30,30100,BIN 00100100,BIN 00
100100,BIN 01100110
900 DATA "o",0,255,62,127,93,93,BIN 10001011,47
901 DATA "p",24,126,60,24,255,60,124,198
904 DATA "l",15,1,1,1,74,54,98,80,120
905 DATA "u",196,1,7,67,17,9,7,7.
906 DATA "1",1,4,15,1248,192,64,192,192,128
1000 PRINT AT RND*19,4: " ". LET t=0: BEEP .008,10: BEEP .008,14: BEEP .008,10:
BEEP .008,14: BEEP .008,10: BEEP .008,14: BEEP .008,10: BEEP .008,14: BEEP .008,
10: BEEP .008,14: BEEP .008,10: BEEP .008,14: BEEP .008,10: BEEP .008,14: BEEP
00,10: BEEP .008,14
000 RETURN

```

Listing for Olympic Runner

```

1 REM OLYMPIC RUNNER K. A. Field 1984
2 POKE 23658,8: DIM x(64): DIM y(64)
3 GO SUB 9000: GO SUB 8000: GO SUB 7000
4 LET i=INT (RND*4): LET m=0: LET n=0: LET r=0: LET s=0
5 LET s=" ON YOUR MARKS... GET SET... GO"
6 BORDER 4: PAPER 7: CLS
7 REM DRAW GAME
8 FOR f=3 TO 16: PRINT AT f,10: PAPER4: NEXT f
10 PAPER 7: INK 4: PRINT AT 0,0: " " AT 1,0: " " AT 2,0: " "
AT 3,
0: " " AT 4,0: " " AT 5,0: " " AT 6,0: " "
12 PRINT AT 0,25: "Q" AT 1,26: "O" AT 2,27: "P" AT 3,28: "U"
" AT

```

WH
YOUR
— RES
PRINC
WIN
gold

Beauty and the Beast by Summer Sheth

You are the Prince. The Princess has been captured by a nasty beast and your task is to rescue her.

Her life is in danger. The beast has dropped a heavy weight which is descending towards her and threatens to crush her.

For the first part of your quest you must pick the roses in the garden

Beware the sharp thorns which surround the roses and which will hurt you. Try and save the Princess before it is too late!

How It works

- 2-5 instructions
- 6-25 movement of prince and movement of heavy load
- 50-54 make sure prince does not go out of screen
- 90-115 set up of USR defined graphics
- 150-200 set up of thorns

Olympic Runner by Andrew Bird

What could be more appropriate in Olympic year than Olympic Runner, based on one of Britain's strongest hopes in the Games, the track events?

Cheer your favourite runner on to win the 400 metres. Skill and dexterity are vital. Fast reactions will speed your athlete on to get the gold, and set a new world record.

In the middle of the track, a key will be specified. To complete one circuit you must press the correct keys about 16 times. Meanwhile the seconds are ticking away...

See if your record times can beat the likes of Coe and Ovett. You may even qualify for the 1988 Olympics!

Who is chasing a target winning a race or pressing a key or missing a medal?

Decide on your mission and then strive to complete it with your Spectrum. Defeat all obstacles to rescue a maiden in distress or go for gold and set a new world track record

How it works

- 2-6 set cursor to upper case, define variables
- 8-60 draw game, prepare player
- 100-300 main loop. Sets up random letter to be pressed, checks if pressed, if so advances runner, keeps time
- 1000 random letter subroutine
- 5100-5130 end of game subroutine
- 7000-7100 set up array for runner position
- 8000-8050 instructions
- 9000-9100 graphics

Variables

- x,y array co-ordinates
- i colour of runner
- m minutes
- s seconds
- n defines which part of array
- l check for letter set up
- run spaces to run
- letter actual letter to be pressed
- aS,bS,cS runner
- sS countdown to race

• When typing in these programs, underlined characters should be entered in GRAPHICS mode.

```

4,29;"G";AT 5,30;"Q";AT 6,31;"Q
14 PRINT AT 15,0;"N";AT 16,0;"N";AT 17,0;"N";AT 18,0;"N";AT 19,0;"N";
;AT 20,26;"P";AT 21,25;"E";
16 PRINT AT 15,31;"E";AT 16,30;"E";AT 17,29;"E";AT 18,28;"E";AT 19,27;"E";
;AT 20,26;"P";AT 21,25;"E";
28 PRINT AT 5,9;"E";AT 6,8;"E";AT 7,7;"E";AT 8,6;"E";AT 9,5;"E";
;AT 10,5;"E";
22 PRINT AT 11,5;"Q";AT 12,5;"Q";AT 13,6;"Q";AT 14,7;"Q";AT 15,8;"Q";
;AT 16,9;"Q";
24 PRINT AT 5,22;"N";AT 6,22;"N";AT 7,22;"N";AT 8,22;"N";AT 9,22;"N";
;AT 10,22;"N";
26 PRINT AT 11,22;"M";AT 12,22;"M";AT 13,22;"M";AT 14,22;"M";
;AT 15,22;"M";AT 16,22;"M";
30 PRINT AT 15,10; INK 0; PAPER 6;"OLYMPIC RUNNER";
35 INK 0; CIRCLE 104,100,10; CIRCLE 128,100,10; CIRCLE 152,100,10; CIRCLE 176,100,10; CIRCLE 140,90,10
40 PAUSE 50
45 PRINT AT 17,10; PAPER 7;
50 FOR f=1 TO LEN s$-11: PRINT AT 1,10,s$(f TO f+11); BEEP .05,-20; NEXT f
55 PRINT AT 13,10; PAPER 7;
60 BEEP .5,40
9 REM MAIN LOOP
100 IF i=0 THEN GO SUB 1000
110 IF PEEK 2560=letter THEN LET runner=i; FT i=0
140 IF run=0 THEN GO TO 160
150 LET next1: LET runner i
155 IF n=65 THEN GO TO 5000
160 IF n=0 THEN LET as$=VE$(1,LET DEF H); LET cs$=FC$(1)
165 IF n=13 THEN LET as$=HE; LET DEF EF; LET CS$=F$(1)
170 IF n=45 THEN LET as$=VE; LET DEF H; LET CS$=F$(1)
200 PAPER 7; INK 1; PRINT AT n,y(n);AT n+1,y(n)+1;
205 PRINT AT n+1,y(n); AT n+2,y(n)+1;
210 BEEP .05,in(n)+10
220 PRINT AT n,y(n)+.4;AT n+1,y(n)+.4
230 BEEP .05,in(n)+10
240 LET s$=s$+n$
245 IF s=60 THEN LET mem+1; PRINT AT 1,17,m;AT 1,18,"Time";AT 1,19,"E";
;AT 1,20,"M";
250 PRINT AT 17,1,TIME
255 IF INT s/10 THEN PRINT AT 17,9;"0";INT s
260 IF INT s/10 THEN PRINT AT 17,19;INT s
280 GO TO 100
999 REM LETTER
1000 LET letter=INT (RND*26)+65; PRINT AT 6,10; INK 0; PAPER 5;" Press ";CHR$(letter);";"; LET i=1; RETURN
4999 REM END OF GAME
5000 FOR f=1 TO 100; BEEP .01,f/4; BEEP .7; BEEP .7; BEEP .4; NEXT f
5010 PAPER 6; INK 0; C$=""; PRINT AT 6,5; INK 1; HAVE YOU EVER RUN 101 10,9; 400 METRES IN
5015 IF m=0 THEN GO TO 5020
5020 PRINT AT 14,7;M;" MIN. ";INT s;" SECONDS"; GO TO 5010
5025 PRINT AT 14,10;INT s;" SECONDS"
5030 PAUSE 50; PRINT AT 21,1; PRESS ANY KEY FOR ANOTHER RACE; PAPER 0; GO TO 4
6999 REM SET UP ARRAY
7000 FOR f=1 TO 9; LET x(f)=10; NEXT f
7010 FOR f=10 TO 24; LET x(f)=f-f; NEXT f
7020 FOR f=25 TO 41; LET x(f)=0; NEXT f
7030 FOR f=42 TO 56; LET x(f)=f-19; NEXT f
7040 FOR f=57 TO 64; LET x(f)=10; NEXT f
7050 FOR f=1 TO 17; LET y(f)=17-f; NEXT f
7060 FOR f=14 TO 20; LET y(f)=17; NEXT f
7070 FOR f=21 TO 45; LET y(f)=47-f; NEXT f
7080 FOR f=46 TO 52; LET y(f)=3; NEXT f
7090 FOR f=53 TO 64; LET y(f)=f-51; NEXT f
7100 RETURN
7999 REM INSTRUCTIONS
8000 CLS; PRINT AT 0,0; PAPER 1; INK 0;" OLYMPIC RUNNER."
8010 PRINT AT 2,10; INK 7;"By A G.Bird"
8020 INK 1; PRINT AT 4,0;"HAVE YOU EVER DREAMED THAT YOU WOULD TAKE PART IN THE OLYMPIC GAMES?"
8025 PRINT AT 10,2; INK 2;"WELL NOW IS YOUR CHANCE."
8030 PRINT AT 13,0;"Use your skill & quick reaction" "time to press the correct keys" "and you will be sprinting around" "the 400 metres circuit in the Olympic Stadium."
800 PAUSE 500; RETURN
8999 REM GRAPHICS
9000 FOR f=65 TO 65495; READ a; FINE f;at; NEXT f
9010 DATA 12,30,12,4,15,22,27,99,0,0,0,192,32,2,0
9020 DATA 0,0,0,0,3,4,4,0,48,120,48,32,240,104,27,19
9030 DATA 3,3,2,3,2,2,6,120,119,128,0,128,64,64,0
9040 DATA 1,1,1,0,1,2,2,0,192,192,64,17,64,64,64,96
9050 DATA 3,15,16,72,192,0,0,0,0,110,110,140,112,0,0,0
9060 DATA 1,1,1,49,14,0,0,0,19,140,8,4,1,0,0,0
9070 DATA 255,254,252,240,240,224,192,110,110,192,24,140,240,252,254,255
9080 DATA 255,127,65,71,15,7,3,1,1,7,15,71,65,127,255
9100 RETURN
    
```

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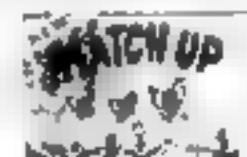
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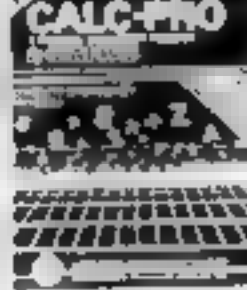
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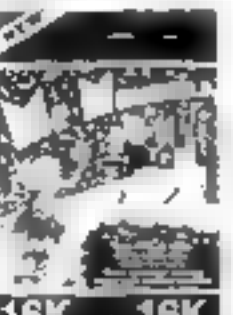
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We're giving away 30 video tapes on computing with the Spectrum, VIC-20, BBC, Electron and Commodore 64.

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Programming Level 1
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Examine the two cartoons carefully — there are several differences between them.

Circle the differences on cartoon B and then fill in your name, address, the number of differences you found and the computer you own — BBC, Electron, Spectrum, Commodore 64 or VIC-20 — and your video recorder format, VHS or Beta.

Seal the coupon and cartoon B in an envelope and write clearly on the back of the envelope the number of differences you found.

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You may enter as many times as you wish, but each entry must be on the official coupon and cartoon — not a copy — and sealed in a separate envelope.

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Masterclass Competition

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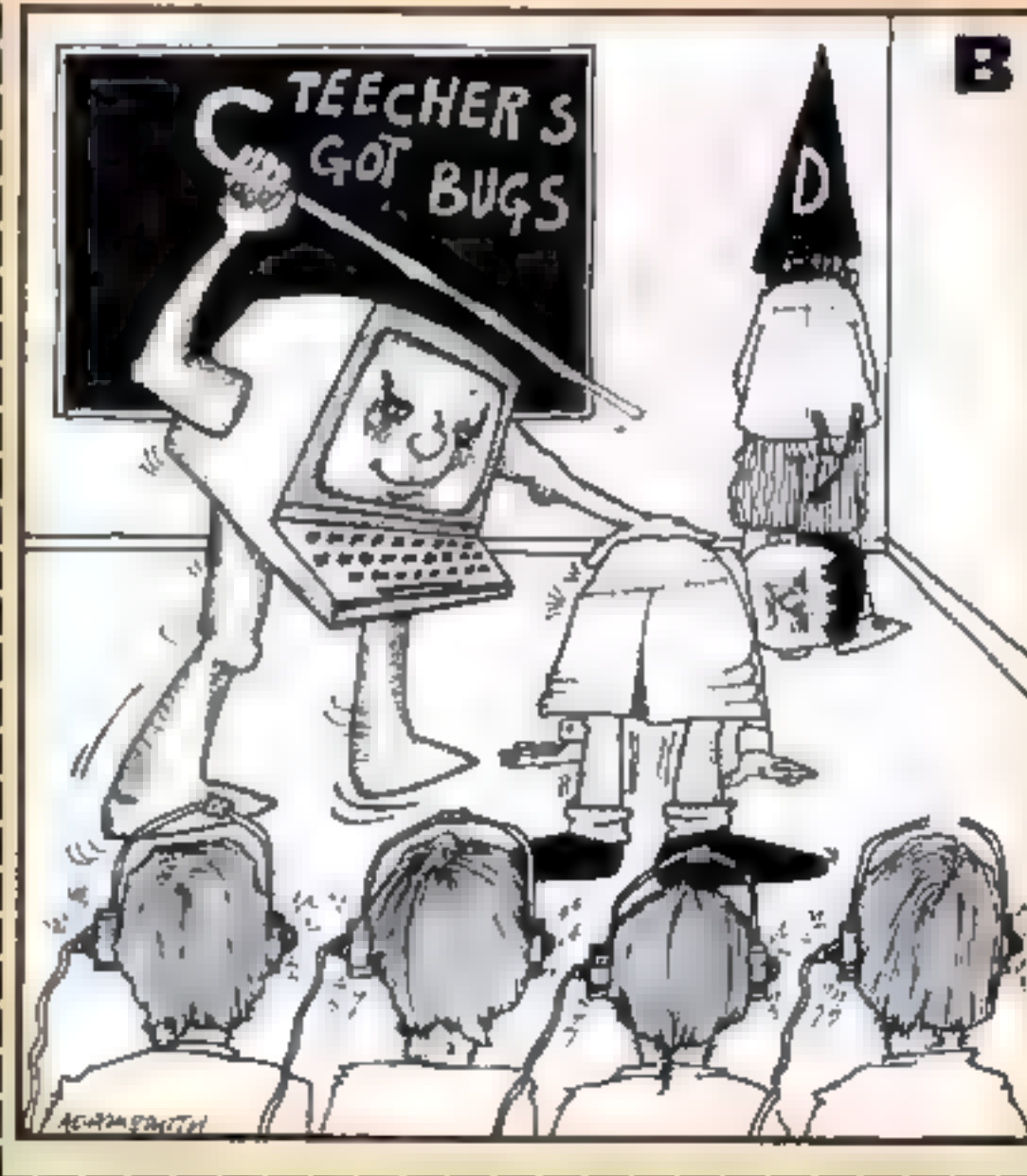
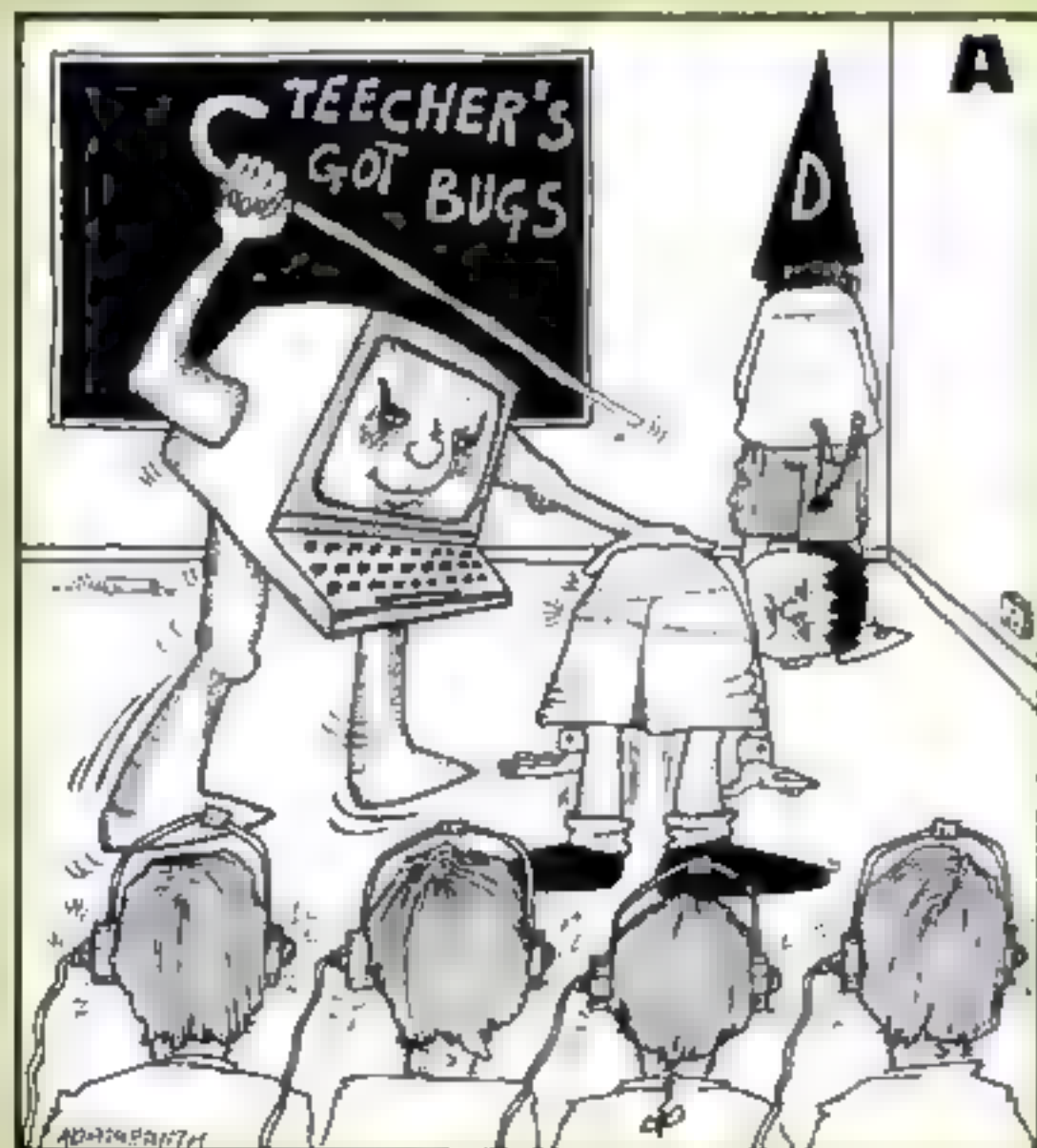
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Two great VIC-20 programs to type in and play. One is for the unexpanded computer and the second needs an extra 3K of RAM

**Galaxy by
Chris Pettit
and
Nic Brereton**

Many moons ago a party of earthlings left their war-torn planet to search for a new home far across the universe

The survivors of this danger-prone trip landed on a seemingly uninhabited planet to establish a new civilisation. But Planos was far from peaceful, as they found out when an evil space fleet began a bombardment.

How it works

0-10 define characters
11-18 introduction
19-22 set up variables
23-26 set up game values
27 input routine
28-31 check movement and collision of first swooper
32-35 as above for second swooper
36-43 move your blaster
44 check fire button (SHIFT key)
45-50, 605-650 firing routine for first second swooper
51 output score
52-54 hit a swooper routine
55 sound effects
56-60 you are hit
61-65 adjust lives routine
66-69 end game routine

The terrified citizens managed to save one ground-based blaster from the remains of their armaments store and they chose you to fight off the mysterious enemy. Can you do it?

The game runs on the unexpanded VIC-20. There are two types of invaders and your score and number of lives left are displayed in the top right.

Use these keys:

Z left
X right
SHIFT fire

Main variables

LI number of lives
S your position
I1, I2 positions of two swoopers
P stops screen scrolling
X counter

**Pilot 20 by
Graham Wells**

My program runs on the 3K expanded VIC-20 and simulates the flight of a light aircraft

I have tried to make it as authentic as possible. Your controls are

less than key	revs up
greater than key	revs down
up arrow	nose up (climb)
*(asterisk)	nose down (dive)

Listing for Galaxy

```

0 POKE36878,15 POKE56,28 POKE52,28
1 FOR =1TO512 POKE7167+X,PEEK(32767+X) NEXT
2 FORY=1TO64 READJ POKE7167+X,J NEXT
3 DATA0 16,16 1,4 254,254,146,16
4 DATA0 20 28,107 93 85 0,0
5 DATA16 84,124 84 16 186 254,146
6 DATA0,16,16,0,0,16,16,0
7 DATA0,0,0 0,16,16,16,0
8 DATA0,108,146,170,84,170,146,108
9 DATA1 1 1 1 1 1 1,1
10 DATA128,128,128,128,128,128,128,128
11 LI=3 POKE808,127
12 POKE36869,240
13 CT=38728 POKE36879,25
14 PRINT"      GALAXY" PRINT" BY CHRIS AND NIC"
15 PRINT"Z" = LEFT " PRINT"X" = RIGHT" PRINT"SHIFT" = FIRE"
16 PRINT" FIGHT OFF THE DIVING SPACERS. HIT BIRDS IN FLIGHT FOR BONUSES."
17 PRINT" HIT A KEY AFTER LOSING A LIFE AND TO START THE GAME. FOR=1TO2000
NEXT
18 GETA$ IFAS=""THEN18
19 POKE36869,255
20 I1=23 I2=21 GK=0
22 P=8186
23 PEEKCLR(GRN)
24 PRINT"      " POKE36879,8 PRINT"      "
25 FORX=1TO15STEP2 POKE7790+X,1 POKE7746+X,1 NEXT
26 PRINT"      "
27 FORX=1TO16 PRINT"IF0" NEXT PRINT"IFG", PRINT"#"
28 FORX=1TO1 POKE7696+X,2 POKE7696+X+CT,2 NEXT POKE8185,6
29 GOSUB2000 G1=T C1=C GOSUB2000 G2=T C2=C
30 FORX=1TO20 POKEX+38884,4 NEXT
31 REM START PROG
32 S=8165 POKES,2 IFPEEK(203)=64THEN105
33 REM
34 IFG1=0THEN190
35 POKEG1,32 G1=G1+11
36 IFPEEK(G1)=7THENI1=23 G1=G1+2
37 IFPEEK(G1)=2THEN5000
38 IFPEEK(G1)=6THENI1=21 G1=G1-2
39 POKEG1,C1
40 IFG1>8185THENG1=G1-376
41 IFRND(1)>.5ANDB1=0THENB1=1 P1=G1+22
42 POKE36875,200 POKE36875,0
43 IFG2=0THEN300
44 POKEG2,32 G2=G2+12
45 IFPEEK(G2)=7THENI2=23 G2=G2+2
46 IFPEEK(G2)=2THEN5000
47 IFPEEK(G2)=6THENI2=21 G2=G2-2
48 POKEG2,C2
49 IFG2>8185THENG2=G2-376
50 IFRND(1)>.5ANDB2=0THENB2=1 P2=G2+22
51 POKE36875,200 POKE36875,0
52 POKES,32
53 IFPEEK(203)=33THENS=S-1 IFPEEK(S)=7THENS=S+1
54 IFPEEK(203)=26THENS=S+1 IFPEEK(S)=6THENS=S-1
55 POKES,2
56 POKEP,32
57 IFPEEK(653)=1ANDB=0THENB=1 P=S-22 POKE36876,200 POKE36876,0
58 IFB=0THEN500
59 FORDF=1TO2
60 POKEP,32 P=P-22
61 IFP<7702THENP=P+22 B=0 GOTO110
62 IFPEEK(P)=1ORPEEK(P)=0THEN4800
63 POKEP,3
64 POKEP,32 P=P-22
65 IFP<7702THENP=P+22 B=0 GOTO110

```


YOUR and fly

left square bracket bank left
right square bracket bank right
G gear up
H gear down
F flaps (lower)
D flaps (raise)
M map display

These are meanings of the flight deck display

VSI vertical speed indicator — by how much your aircraft climbs in a second

ASI air speed indicator

ALT altitude — height above sea level

HEAD your compass heading

DME distance from beacon

BRG your bearing relative to the beacon. When starting on runway, heading is 360, BRG is 180. If you look on the map you will see that the beacon is directly behind the runway and so behind you, a compass bearing of 180 (south)

Stall speed is 60 ASI, the undercarriage is damaged above 150 ASI and ceiling is 3,000.

I hope you enjoy playing it. One improvement would be to add some sound effects.

How it works

- 1-5 initialisation, GOSUB for introduction
- 10-20 variables for take-off
- 100-260 display instruments
- 270-290 controls from keyboard
- 300-340 change variables
- 345-347 print scenery
- 355-390 POKE artificial horizon
- 420-490 change speed, altitude etc
- 500-1000 check for crash, stall etc
- 1000-1180, 1200-1290 bank left, bank right
- 1500-1540 print why you crashed
- 3000-3050 landing lights before runway
- 3900-3110 runway lights
- 3200-3320 print mast lights, check for crash into masts
- 4000-4150 print map
- 4500-4670 introduction
- 4680-4690 variables for in flight
- 5000-6080 crash routine, play again?

```

465 IFPEEK(P)=10RPEEK(P)=0THEN4000
470 POKEP,3
480 NEXT
500 IFB1=0THEN600
505 FORDF=1TO2
510 POKEP1,32 P1=P1+22
515 IFPEEK(P1)=2THEN5000
520 IFP1>8185THENB1=0
525 POKEP1,4
550 NEXT
600 IFB2=0THEN700
605 FORDF=1TO2
610 POKEP2,32 P2=P2+22
615 IFPEEK(P2)=2THEN5000
620 IFP2>8185THENB2=0
625 POKEP2,4
650 NEXT
690 REM[HOME][HOME]
700 PRINT"4"SC"4"
1999 GOTO107
2000 T=0 FORX=7810TO7702STEP-1 IFPEEK(X)O32THENT=X C=PEEK(X) X=7702 POKEP,32
2002 NEXT RETURN
3000 FORZ=240TO190STEP-2 POKE36876,Z NEXT POKE36876,0 RETURN
4000 IFPEEK(P)=1THENSC=SC+10 GK=GK+1 IFP=G1ORP=G2THENSC=SC+90
4005 B=0
4010 IFPEEK(P)=0THENSC=SC+50 GK=GK+1 IFP=G1ORP=G2THENSC=SC+450
4020 POKEP,5
4030 GOSUB3000
4040 IFP=G1THENGOSUB2000 G1=T C1=C
4050 IFP=G2THENGOSUB2000 G2=T C2=C
4055 IFGK=19THEN20
4060 GOTO1999
5000 LI=LI-1 IFLI=0THEN6000
5005 POKES,5 FORX=1TO50 POKE36877,177-X NEXT
5007 IFPEEK(203)=64THEN5007
5010 POKE7697+LI,32 GOTO1999
6000 POKES,5 POKES+CT,7 FORX=255TO127STEP-1 POKE36877,X NEXT
6001 REM[CLR][3 CRSR DOWN][WHT][2 CRSR DOWN][CRSR DOWN]
6005 POKE36869,240 PRINT"3ADUCK TOUGH LUCK " X"YOU DIED,BUT VOL SC
ORED "SC
6019 LI=3 PRINT"4"
6020 IFSC>HSTHENHS=SC PRINT"NEW "
6025 SC=0 B=0
6030 PRINT"HIGH SCOPE"HS
6032 REM[2 CRSR DOWN]
6035 PRINT"4"IT A KEY TO CONTINUE"
6040 IFPEEK(203)=64THEN6040
6050 GOTO12
    
```

Listing for Pilot 20

```

1 REM"PILOT 20 BY G.WELLS
2 POKE650,128
3 REM INITILISATION
4 MS="
5 GOSUB4500
9 REM [CLR][GRN]
10 POKE36879,8 PRINT".J" A=0 S=0 R=0 US="NDOWN" BRG=180 H=360
20 POKE36878,10 D=10 U=0 B=1 V=0
90 REM INSTRUMENTS
95 REM [HOME][9 CRSR DOWN][VEL]
100 PRINT"
110 PRINT" A/H ASI"
115 REM[WHT]
120 PRINT" VSI ALT P.
130 PRINT"
140 PRINT" P.
150 PRINT" HEAD P.
160 PRINT"
170 PRINT"
185 REM[VEL][WHT][CRSR UP][14 CRSR RIGHT]
190 PRINT" FUEL INT(F) PRINT"STALL",S$
195 REM[VEL][WHT][CRSR UP][14 CRSR RIGHT]
200 PRINT" REVS R" PRINT"LV/C"US
205 REM[VEL][WHT][CRSR UP][14 CRSR RIGHT]
210 PRINT" BECH A" PRINT"BRG"INT(BRG)
215 REM[HOME][19CRSR DOWN][VEL][WHT][VEL][CRSRUP][14CRSPRIGHT][VEL][CRSR LEFT]
220 PRINT" FLAP ",FL," DEG" PRINT"
INT D)"
225 REM[HOME][12 CRSR DOWN][CRSR RIGHT][CRSR LEFT]
230 PRINT" V"
235 REM[HOME][13 CRSR DOWN][17 CRSR RIGHT]
240 PRINT" INT(S)
245 REM[HOME][12 CRSR DOWN][11 CRSR RIGHT]
250 PRINT" A
255 REM[HOME][15 CRSR DOWN][11 CRSR RIGHT]
260 PRINT" H
    
```

As usual, we have inserted REMs in the lines above control characters as a guide when you are typing in the programs. These REMs should not be entered.

VIC-20 PROGRAMS

```

266 REM CONTROLS
270 XETA$ IF A$=" " THEN N290
271 IF A$="G" THEN U$="UP" REM (RED)
272 IF A$="H" THEN D$="DOWN" REM (GRN)
273 IF A$=" " THEN R$="R" IF R>360 THEN R=360
274 IF A$=" " THEN R$="R-600" IF R<0 THEN R=0
275 IF A$=" " THEN U$="U" IF U>180 THEN U=180
276 IF A$=" " THEN D$="D-1" IF D<0 THEN D=0
277 IF A$=" " THEN V$="V" IF V>1
278 IF A$=" " THEN V$="V-1" IF V<0 THEN V=0
279 IF A$="F" THEN FL=FL+1 IF FL>5 THEN FL=5
280 IF A$="D" THEN FL=FL-1 IF FL<0 THEN FL=0
285 IF A$="M" THEN NGOSUB 4800
286 REM MAIN LOOP
290 IFS>60 THEN S$="60" REM (GRN)
295 IFS<60 THEN S$="60" REM (RED)
298 REM (HOME) (WHT)
300 IF A<0 AND D<10.9 AND U<11.5 THEN PRINT "RUNWAY OVERSHOOT" GOTO 1540
305 IF A<0 AND D<9.9 AND U<11 AND A<0 THEN A=0 GOSUB 1500
309 REM (HOME) (WHT)
310 IF C<0 AND D<0 THEN S=0 PRINT "STALLED!" GOTO 1540
320 POKE 7680+7+(22#13)+(22#0), 32
330 IF V>5 THEN N0=1 N=67
335 IF V<5 THEN N0=-1 N=67
336 IF V<0 AND V>-5 THEN N0=0
340 IF U>0 THEN GOTO 360
341 REM SCENERY
344 REM (HOME) (WHT)
345 PRINT "M" FOR INT(A)/500 PRINT " " NEXT
346 PRINT "M", MID$(M$, INT(B), 22),
347 IF A<50000 THEN FOR T=1 TO -INT(A)/500 PRINT "
GOTO 360
350 FOR T=1 TO -INT(A)/500 Y=INT(PND(1)*10) PRINT "M", MID$(M$, INT(B+T)+Y, 22), NEXT
T
355 REM ARTIFICIAL HORIZON
360 IF U=0 THEN M=67
365 IF U<0 THEN M=78
370 IF U>0 THEN M=77
380 POKE 7680+7+(22#13)+(22#0), M POKE 38400+7+(22#13)+(22#0), 7 U=0
385 REM (HOME) (WHT)
390 IF A<3500 THEN A=3500 PRINT "M# CEILING!"
420 A=A+Y S=S+R, 1000
421 REM CHANGE SPEED/ALTITUDE ETC.
422 IFS R'1000 THEN S=S-2
425 IFS R'1000 THEN S=S+1
430 S=S-FL#2 F=F-R/100000
441 IF H<360 AND D>270 THEN NERG=BRG-1+D/10 B=B-.1 IF B<1 THEN B=61
442 IF H<270 AND D>180 THEN NERG=BRG+1-D/10 B=B+.1 IF B>61 THEN B=1
443 IF H>0 AND D<90 THEN NERG=BRG+1-D/10 B=B+.1 IF B>61 THEN B=1
444 IF H<180 AND D>90 THEN NERG=BRG-1+D/10 B=B-.1 IF B<1 THEN B=61
445 IFS<0 THEN N=50
450 IF H>270 OR H<90 THEN ND=D+.01 GOTO 470
460 IF H<270 OR H>90 THEN ND=D-.01
470 IF D<=11 AND D>=10 AND H=360 AND BRG>179.9 AND BRG<181 AND U=0 THEN NGOSUB 3000
480 IF D<=10 AND D>=9.8 AND H=360 AND BRG>179.9 AND BRG<181 AND U=0 THEN NGOSUB 3095
485 REM (RED)
490 IF A<1 AND U$="UP" THEN GOTO 1500
550 IF BRG<89.9 AND BRG<91 AND D<3.5 THEN NGOSUB 3200
560 IF BRG>269.9 AND BRG<271 AND D<1.5 THEN NGOSUB 3300
565 REM (HOME) (WHT)
570 IFF=0 THEN PRINT "OUT OF FUEL" GOTO 1540
575 REM (GRN) (WHT)
580 IFS>1500 AND U$="DOWN" THEN PRINT "GEAR DAMAGED" GOTO 1540
590 PRINT "M
600 IF D>12 AND BRG<140 AND BRG<210 AND A<50 THEN PRINT "W# BRASH INTO BUILDING" GOTO 1540

```

```

950 GOTO 1000
1000 IF U=1 THEN M=H-1
1010 IF U=-1 THEN M=H+1
1060 IF H<0 THEN M=360
1070 IF H>360 THEN M=0
1075 REM (HOME) (WHT)
1080 IF A<30 THEN PRINT "RETURN TOO LOW" GOTO 1540
1089 REM BANK RIGHT
1090 IF C<1 THEN GOTO 1200
1095 REM (HOME) (WHT) (UP) (GRN)
1100 PRINT "M"
1110 PRINT "M"
1120 PRINT "M"
1130 PRINT "M"
1140 PRINT "M"
1150 PRINT "M"
1160 PRINT "M"
1170 PRINT "M"
1180 GOTO 250
1190 REM BANK RIGHT
1200 IF J<1 THEN GOTO 1290
1205 REM (HOME) (WHT) (UP) (GRN)
1210 PRINT "M"
1220 PRINT "M"
1230 PRINT "M"
1240 PRINT "M"
1250 PRINT "M"
1260 PRINT "M"
1270 PRINT "M"
1280 PRINT "M"
1290 GOTO 250
1500 IF D<10000 11 AND BRG 180.90689, 179.9 THEN PRINT "SAFE LANDING"
FOR T=1 TO 15, 40
1505 REM (WHT)
1510 IF J=0 THEN M=15.30
1515 REM (HOME) (WHT)
1520 PRINT "M" ORDER (A) UP GOTO 1540
1525 REM (HOME) (WHT)
1530 PRINT "M" ORDER (A) UP GOTO 1540
1540 PRINT "M" ORDER (A) UP GOTO 1540
1545 REM (WHT)
1555 REM (HOME) (WHT)
1560 FOR T=1 TO 10000 NEXT PRINT "M" GOTO 5000
3000 IF D=10.9 THEN N=2
3005 IF A=4 THEN GOTO 4050
3010 REM LANDING LIGHTS
3012 REM (HOME) (WHT) (UP) (DOWN) (WHT)
3015 PRINT "M"
3020 PRINT "M"
3025 PRINT "M"
3030 PRINT "M"
3035 PRINT "M"
3040 IF D=10.9 THEN POKE 36876, 255
3050 REM (WHT)
3060 REM RUNWAY LIGHTS
3065 IF A=4 THEN PRINT "M"
3068 REM (HOME) (WHT) (GRN) (WHT) (GRN) (WHT)
3070 PRINT "M"
3101 PRINT "M"
3102 PRINT "M"
3103 PRINT "M"
3104 PRINT "M"
3105 PRINT "M"
3110 REM (WHT)
3190 REM BANK LIGHTS
3195 REM (HOME) (WHT) (GRN) (WHT) (GRN) (WHT)

```

VIC-20 PROGRAMS

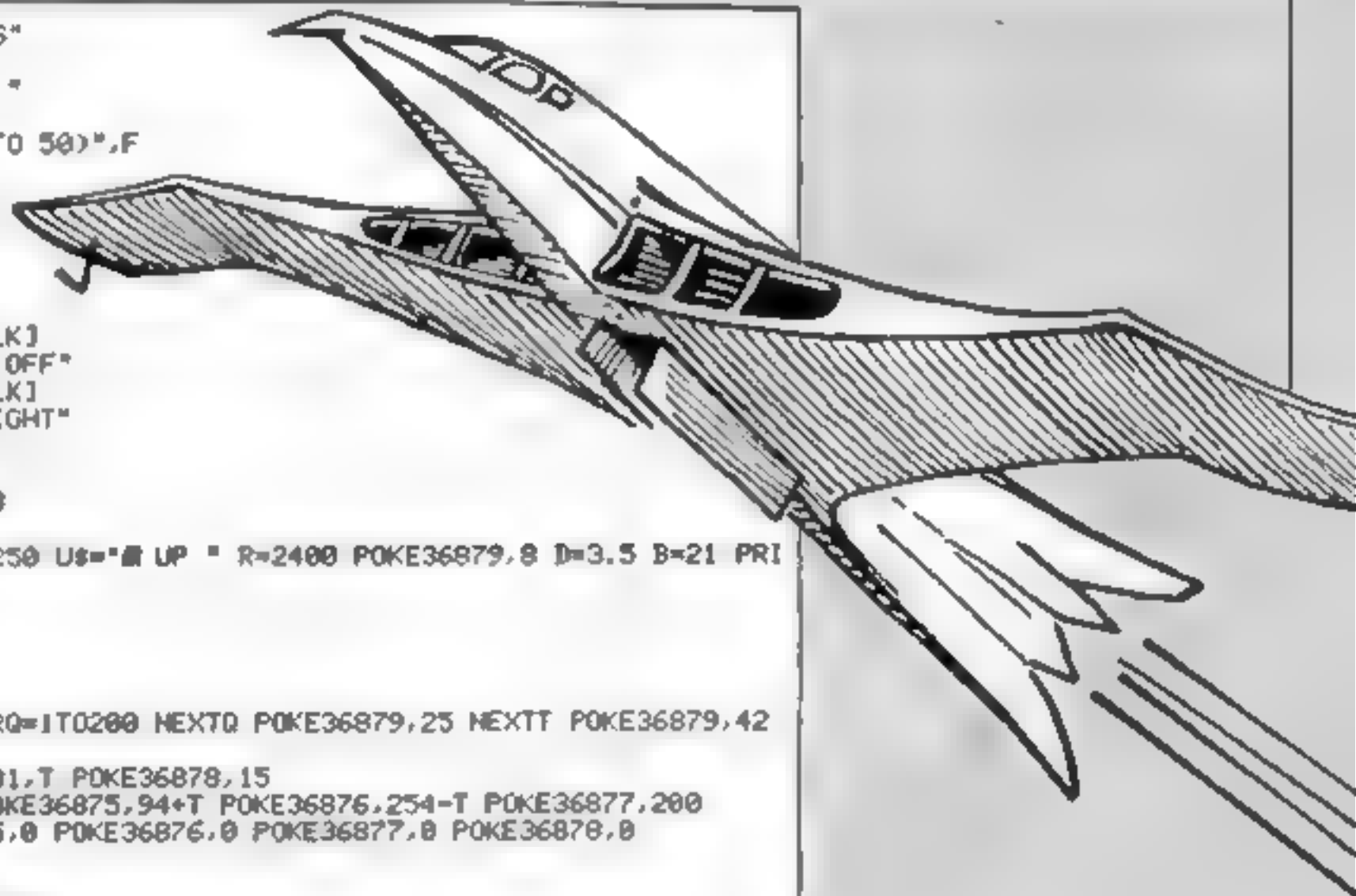


```

3200 PRINT"#####."
3210 IFA<150THENPRINT"##### FISH INTO MAST" GOTO1540
3220 RETURN
3295 REM(HOME)[6(CSR DOWN)][15(CSR RIGHT)][(PED)][(WMT)]
3300 PRINT"#####."
3310 IFA<100THENPRINT"##### FISH INTO MAST" GOTO1540
3320 RET.PH
3390 REM MAP
3395 REM(UP)[(WMT)]
4000 PRINT"[]"
4005 REM(HOME)
4010 PRINT"[] TOWN [ ]"
4020 PRINT"[] H H H"
4030 PRINT"[] [ ]"
4040 PRINT" N [ ]"
4050 PRINT" S+E [ ]"
4060 PRINT" W [ ]"
4070 PRINT" "
4080 PRINT" [ ]"
4090 PRINT" [ ]"
4100 FORT=1T010
4120 PRINT" [ ] NEXTT"
4130 PRINT" [ ] * 100 [ ] * 150 [ ]"
4140 PRINT" [ ] 2000 MILES"
4150 FORT=1T0300 NEXTT PRINT"[]" GOTO90
4490 REM INTRODUCTION
4500 POKE36879,25 POKE36878,0 PRINT"[]" PILOT" PRINT"[]" YOU ARE THE PIL
OT"
4510 PRINT" OF A LIGHT AIRCRAFT"
4520 PRINT" YOU MUST FIND THE"
4530 PRINT" RUNWAY AT NIGHT "
    
```

```

4540 PRINT"BEFORE YOUR FUEL GOES"
4545 REM(RED)[BLU]
4550 PRINT" BRG= RUNWAY 100' "
4555 REM(CSR DOWN)[BLU]
4560 PRINT"[]" INPUT" FUEL (1 TO 50)"
4570 IFF<0ORF>50THENGOTO4500
4575 REM(CSR DOWN)[BLU]
4600 PRINT"[]" DURING FLIGHT"
4610 PRINT" PRESS 'M' FOR MAP"
4615 REM(CSR DOWN)[GRN]
4620 PRINT"[]" OPTIONS --"
4625 REM(CSR DOWN)[BLU][GRN][BLK]
4630 PRINT"[]" 1[ ]-----TAKE OFF"
4635 REM(CSR DOWN)[BLU][GRN][BLK]
4640 PRINT"[]" 2[ ]-----IN FLIGHT"
4650 GETA$ IFA$=""THEN4650
4655 REM(CLR)
4660 IFA$="1"THENPRINT"[]" GOTO10
4670 IFA$<"2"THEN4650
4680 BRG=90 H=270 A=1000 V=0 S=250 U$="" UP " R=2400 POKE36879,8 D=3.5 B=21 PRI
NT"[]"
4685 REM(RED)[CLR]
4690 GOTO40
5000 POKE36878,15
5010 POKE36877,220
5020 FORT=1T010 POKE36879,42 FORQ=1T0200 NEXTQ POKE36879,25 NEXTT POKE36879,42
5030 POKE36877,0 POKE36878,0
5040 FORT=38T0160STEP.5 POKE36881,T POKE36878,15
5050 POKE36874,150+RND(1)*100 POKE36875,94+T POKE36876,254-T POKE36877,200
5060 NEXTT POKE36874,0 POKE36875,0 POKE36876,0 POKE36877,0 POKE36878,0
5080 POKE36879,25
5085 REM(CLR)[BLU][5(CSR DOWN)]
5090 PRINT"#####YOU KILLED YOURSELF"
6000 PRINT"NOT TO MENTION THE"
6010 PRINT" PASSENGERS ABOARD"
6020 PRINT" I HOPE YOU WILL SLEEP"
6030 PRINT" WELL TONIGHT IN HEAVEN",
6040 FORT=160T038STEP-.1 POKE36881,T NEXTT
6050 PRINT"ANOTHER GO (Y/N)" POKE198,0
6060 GETA$ IFA$=""THEN6060
6065 REM(CLR)[CSR UP][BLU]
6070 IFA$<"Y"THENPOKE36879,27 PRINT"[]" END
6080 GOTO4500
    
```



Bridge Master Dragon 32 £29.95

Dragon Data, Kenfig Industrial Estate, Margam, Port Talbot, Wales SA13 2PE

I am not a bridge buff I know only a little about the game so when Bridge Master dropped through my door, I thought this might be my chance to learn the grand game of bridge. This expensive package includes a cartridge, a cassette containing 100 different hands (more complex hands will be available on cassette, we are told) and two quite extensive manuals, one detailing the game and the other how the cartridge works. All this is extremely well packaged but what of the content?

The program is designed for the beginner or less experienced player. The tutor takes you through the basics of the game and on to the more complex stages. The package is far too extensive to detail, but uses excellent graphics for the four hands, has many helpful features for the novice and numerous little touches that add fun and realism. The acid test was to place a proper bridge player down in front of the computer; I did so and had to drag him away when I wanted to go home. This is a winner.

C.G.

instructions	████████
playability	████████
graphics	████████
value for money	████████



If I had a Million Dragon 32 £9.99

Phoenix, Spangles House, 116 Marsh Rd, Pinner, Middx

This is not the usual one-game package but two linked games, one of which must be successfully completed in order to move to the next one. Phoenix describes them as action and adventure games, but don't be misled by this; they are not arcade action and text type adventure! Rather the first game is faster moving than the second and has the added interest of being for more than one player, should you so wish.

The first is actually very like a famous property speculation

board game but instead of having the full board on display you see only the square you land on. The aim of this game is to get £20,000 so that the powers that be lend you a million for the next game. Having got your codes, and by now only the winner of game one is playing, you try to turn your million into five million by stock trading and other investments. The program has the facility to check your mail for good or bad news. Overall an involving package good on fun but low on originality.

D.C.

instructions	90%
playability	80%
graphics	50%
value for money	80%



Lunar Rover Patrol Dragon £10.95

Dragon Data, Kenfig Industrial Estate, Margam, Port Talbot, West Glam SA13 2PE

Drive your lunar buggy across the surface of the moon avoiding or destroying a number of obstacles, including boulders, craters and spaceships.

Movement is controlled by the joystick. Moving left or right controls speed while upwards enables the buggy to jump over craters. The fire button activates horizontal and vertical lasers. As there are only four main actions I am surprised there is no facility to use keys.

Points are given for jumping or shooting obstacles. A bonus is awarded according to speed of progress.

Your current score and the highest score are displayed on screen, as is the number of buggies left. When your buggy is destroyed you re-start from the last point successful. I've passed.

The screen display varies considerably as you progress. I especially liked the way the buggy fell to pieces when it was hit.

Loading gave no problems and the instructions included are clear.

Not the sort of game to which I would become addicted, but certainly very enjoyable. J.E.M.

instructions	75%
playability	75%
graphics	80%
value for money	70%



Pit your wits against these!

New software for the Dragon is assessed by our reviewers

Junior's Revenge Dragon 32 £10.99

Dragon Data, Kenfig Industrial Estate, Margam, Port Talbot, Wales SA13 2PE

Microdeal's Donkey King (renamed The King) has been one of the biggest selling Dragon games. This is the long-awaited sequel to the masterful original and something I could not wait to get my hands on. You are the son of the gorilla that was captured in the first game and must try to rescue your dad from the evil clutches of Luigi. This entails jumping across vines, scampering up and down them and avoiding obstacles and unfriendly beasts sent by Luigi to trap you. As in the original

game, once you reach the top of the screen you are taken to a different screen. There are four screens involving trampolines, conveyor belts and all the obstacles you would expect from this type of game.

There is a choice of one of the two-colour screens or the higher resolution black and white screen. The title page, demonstration mode and high score table are all up to the usual high standard but I cannot help feeling that this game is not as good as the original. This is far too expensive for an arcade game.

C.G.

instructions	55%
playability	75%
graphics	75%
value for money	30%



El Bandido Dragon £7.95

Dragon Data, Kenfig Industrial Estate, Margam, Port Talbot, West Glam SA13 2PE

The unlikely hero of this amusing game is an ant who scurries around a maze stealing fruit while being hunted by spiders. The ant walks up to the fruit and disappears. You can then move the fruit slowly back to your lair. If the spider is in hot pursuit you can drop the fruit and escape more quickly. The spider cannot get you in your lair.

There are eight skill levels and playing areas which control the number of spiders and complexity of the maze.

Two people can play, and then not only must you avoid spiders but also try and grab the fruit before your opponent does.

You begin each game with three lives but it is possible to gain more. Score for each player and the highest score are displayed.

Screen display is excellent. I particularly liked the marauding spiders. I had no problems loading the game and the instructions are sufficient.

Playing this gave me a lot of laughs and I shall certainly be playing many more times. J.E.M.

instructions	70%
playability	85%
graphics	90%
value for money	85%



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Programming Information

Colours

- 0. Black
- 1. Blue
- 2. Red
- 3. Magenta
- 4. Green
- 5. Cyan
- 6. Yellow
- 7. White
- 8. No Change
- 9. Contrast

Graphics Characters

	Normal	Inverse
1		
2		
3		
4		
5		
6		
7		
8		

Colour Control

- INK n** : n: Colour (0 to 9)
- PAPER n** : n: Colour (0 to 9)
- FLASH n** : n: 0 Steady, 1 Flashing, 8 No Change
- BRIGHT n** : n: 0 Normal, 1 Bright, 8 No Change
- INVERSE n** : n: 0 Normal (Ink on Paper)
n: 1 Inverse (Paper on Ink)
- OVER n** : n: 0 New character obliterates old one
n: 1 New and old characters combine to give ink colour where either (not both) were ink, otherwise paper colour
- BORDER n** : n: Colour (0 to 7)
- ATTR(l,c)** : Function returning attributes of the character at line l, column c
Bit 7 is 1 for Flashing 6 is 1 for Bright
5,4,3 - Paper Colour
2,1,0 - Ink Colour

Graphics Commands

- PLOT c;x,y** : Ink in pixel x,y
- DRAW c;x,y,θ** : Draw line x,y pixels long (relative) while turning θ radians (Optional)
- CIRCLE c,x,y,r** : Draw circle centred at pixel x,y with radius r pixels
(Note: c is any local colour controls required)
- POINT(x,y)** : Function which returns:-
0 if pixel x,y is paper colour
1 if it is ink colour

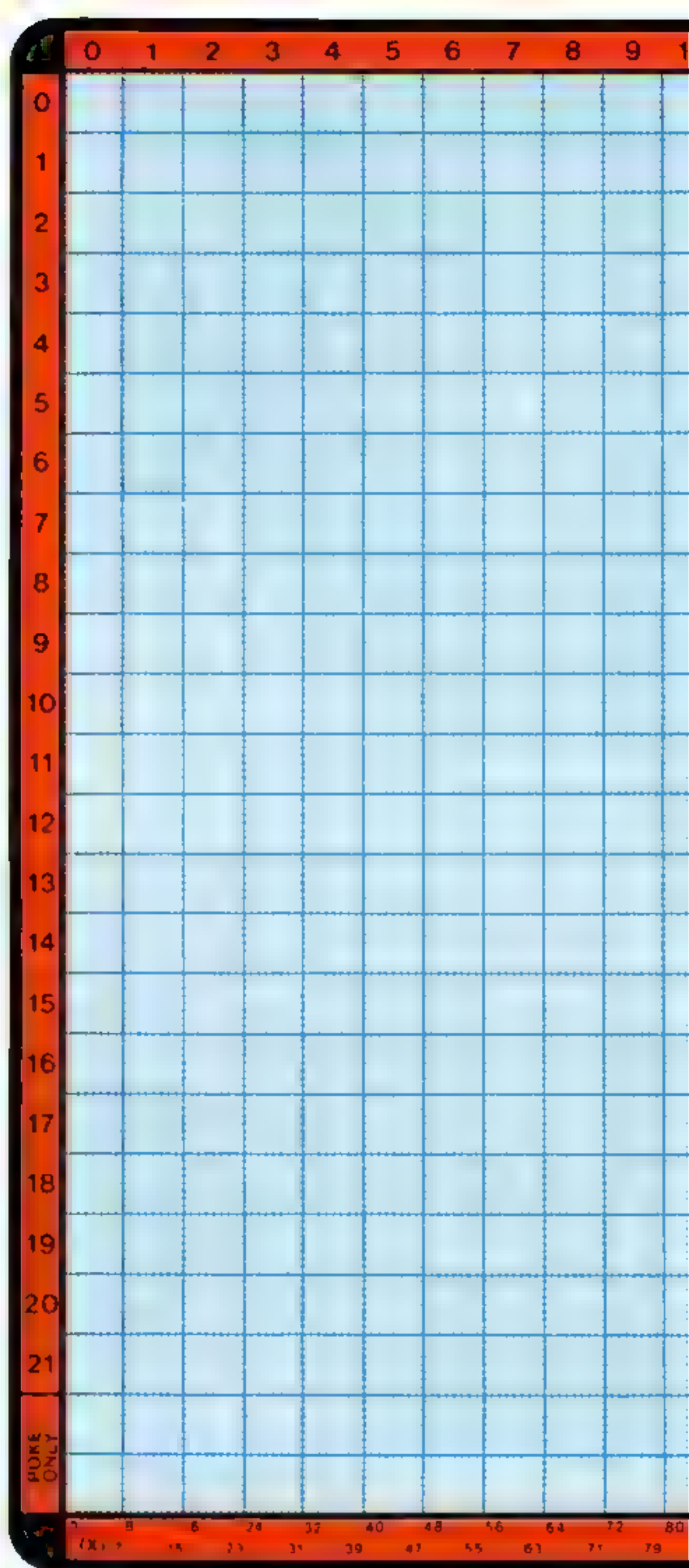
Character Commands

- PRINT item, item...** A print item can be one of
 - Null
 - Numeric expression
 - String expression
 - **AT l, c**: moves cursor to line l, column c
 - **TAB c**: moves cursor to column c same line
 - Colour control command
 Items can be separated by
 - a comma, next item at next half line
 - a semi-colon, next item follows immediately
 - an apostrophe, next item on new line
- POKE a,n** : Writes the value n to address a
- PEEK a** : Function which returns the value at address a
- USR "a"** : Function which returns the start address of character a
- SCREEN\$(l,c)**: Function which returns the character at line l, column c
- BIN n** : Indicates n is a binary number

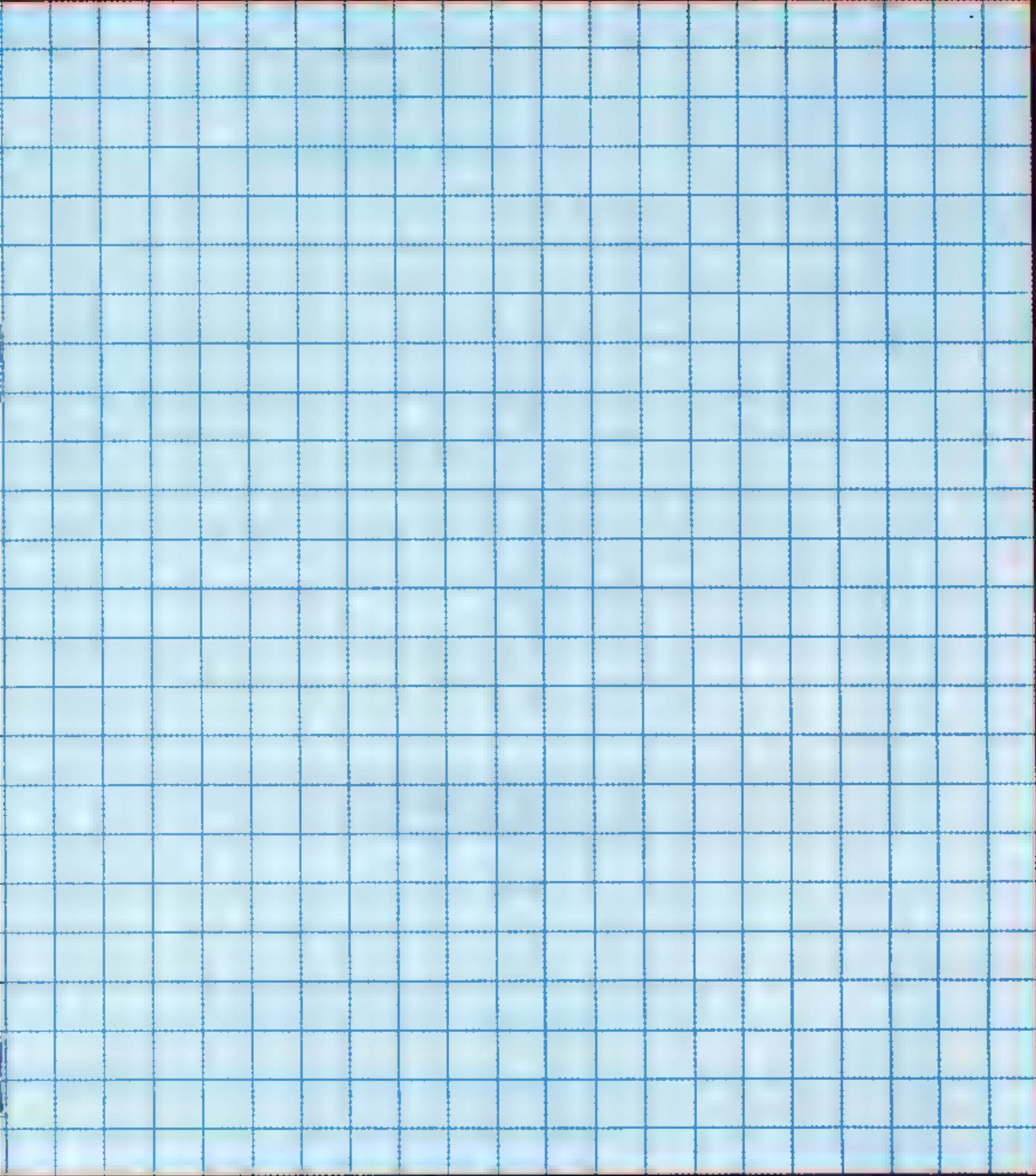
User Defined Graphics

- POKE USR "a"+x, BIN n**: will write the binary number n to the xth row of the bit pattern for character a

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TOP 20

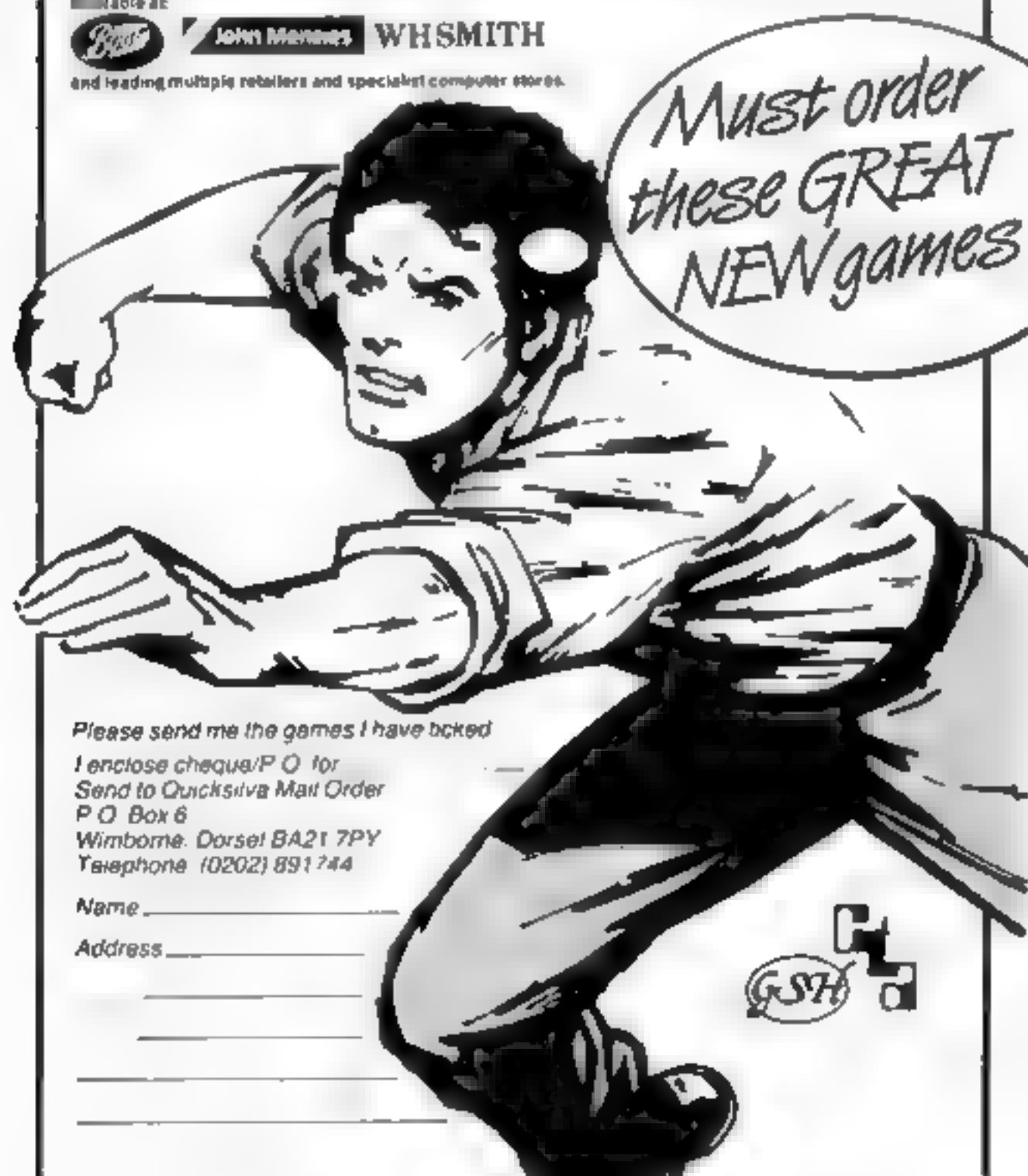
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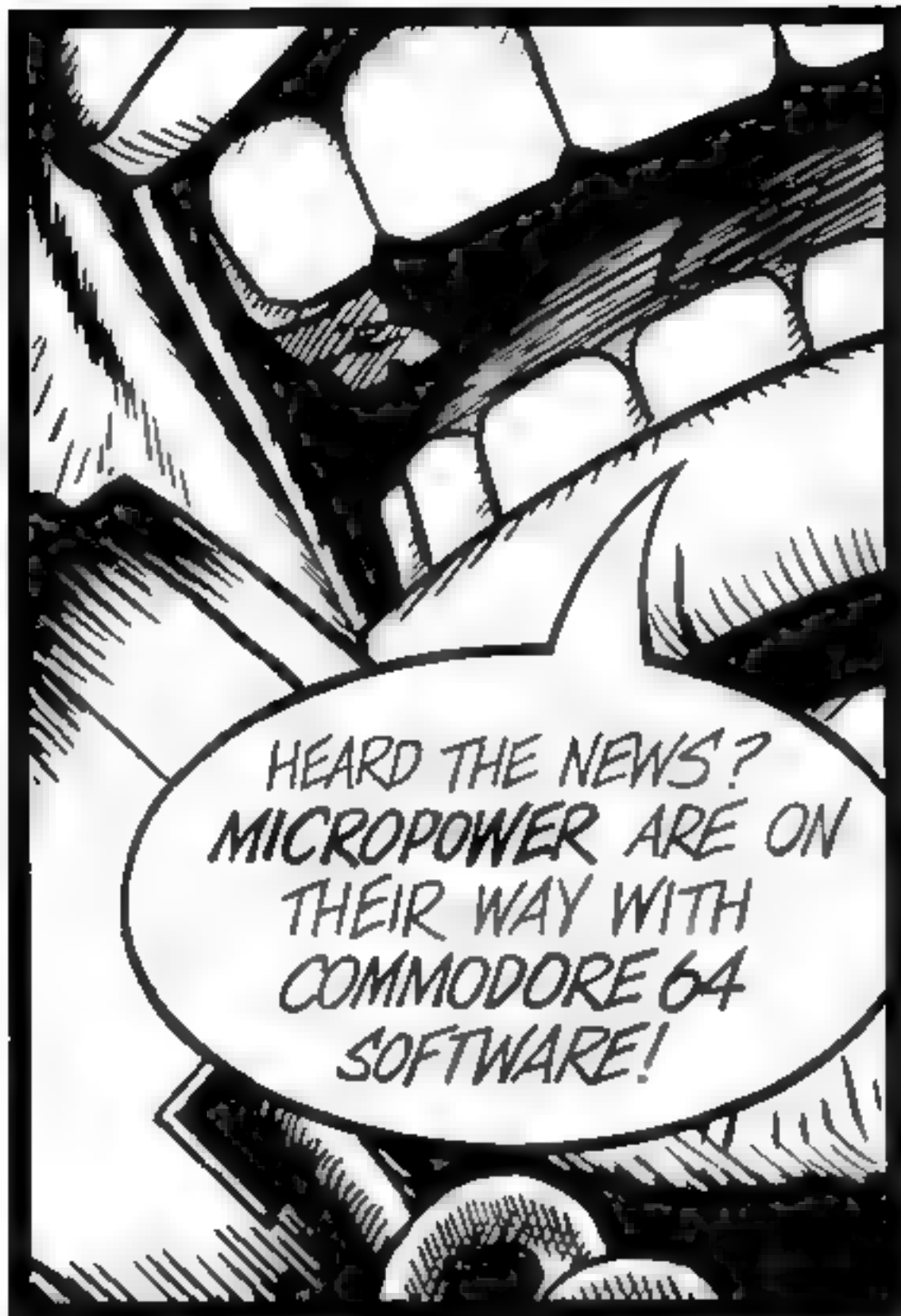
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Stomp them or shoot them — that's the question. It's all a matter of how much patience you have. Twelve geese have escaped into six wheat fields. Fortunately, you are only confronted by one at a time, but you must send them away before they gobble all the wheat. These crafty geese avoid cornering tactics by walking into ditches you can't cross. When the chase becomes tiresome it's all too tempting to stomp a goose by walking into it. Doing this loses points.

At random intervals a goose flies across the screen. You may

shoot it by pressing the spacebar, but this is difficult and slow to respond.

Word Race will be familiar to viewers of Channel Four's Countdown. Two players participate, each taking turns to ask for vowels or consonants, randomly selected by the computer. Both players must then make a word using as many of the nine letters as possible in a limited time. Points are scored for using the most letters. The computer cannot verify the meaning or spelling of words, but will check that the letters used are legal. J.W.

instructions	85%
playability	80%
graphics	65%
value for money	90%



**Speed Snake
+ 16K ZX81
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Two keys are all you need to steer the snake around the 10 mazes in this game. And, at times, two keys don't seem to give enough control. Plus signs represent the nuts you must eat to gather points, and inverse plus signs are berries to gather when ripe, but which only stay ripe for a tantalising short time. Poison balls are your enemy; if you eat them you die, you also die if you eat yourself.

Impossible, I hear you cry. Don't you believe it. The game is so fast and furious you can easily

bump into yourself or any of the maze boundaries.

This is one of the few snake games in which the snake moves faster, the longer it gets. Imaginative use of the very limited graphics capabilities of the ZX81 make for a very enjoyable and exciting game. Although at first it might seem easy, it is deceptively difficult to master. Getting your name at the top of the hall of fame requires a lot of effort. B.B.

instructions	100%
playability	100%
graphics	95%
value for money	85%



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London NW3 7NT

If you have a weight problem it seems the modern solution is to talk it over with your ZX81!

This package is quite large with two cassettes and a 22-page booklet, and your first problem is digging out the cassettes from their plastic beds. However, the book is easier to extract, and is worth reading if only to dream of blueberry pie and baked bluefish.

Seriously though, you must read the book first because you have to prepare certain information about your eating habits before you can answer the questions on the first cassette. After the computer has digested the information regarding your age, sex, height and eating habits your own personal weight goals are assessed. Side B is concerned with producing menus based on different foods of different caloric values, giving recommended quantities and even taking your mood into account.

Because dieting is such a personal, sometimes very serious business, I can neither recommend nor condemn this program. Although I understand the program was written by a Dr M. Minsky I can find no reference to him in the handbook. B.B.

instructions	100%
playability	100%
graphics	100%
value for money	75%



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+ 16K ZX81
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Softchoice, 52 Platts Lane,
London NW3 7NT

Pac-Man, which started life on arcade video games machines, has been re-programmed for just about every home computer. Mr Munchiee is not just a version for the ZX81, it is the version for the ZX81.

This is the third program by the same author I have reviewed, and each program has two things in common: good programming techniques and a very imaginative use of the rather dull ZX81 graphics.

There are three mazes, and with variable speed, this game is as challenging as any you are

likely to meet on any machine. Having eaten one of the pellets scattered around the maze you have a very limited time in which to turn the tables on your pursuer. If you do manage to catch and eat it, you are rewarded with 200 points, which is also the prize for eating one of the protected cherries.

Although I am not an addict of this type of game, I did find this version very playable. As with all ZX81 games though, the rather negative feel of the keyboard doesn't make for very long games sessions. B.B.

instructions	100%
playability	100%
graphics	90%
value for money	90%



**Home Budget
48K Spectrum
£5.75**

Kuma, Unit 12, Horseshoe Park,
Horseshoe Rd, Pangbourne,
Berks RG8 7JW

Computer budgeting should help those who are useless with figures and free those who are numerate from unnecessary tedium. Home Budget is a well laid-out program. You can adjust the expense headings as you wish, it offers help pages at most stages and it appears to be foolproof against wrong key entry.

However, there is no written documentation or loading instructions when simple explanations of how to budget would be invaluable. Also, why must the forecast figures be entered 12 times for each heading? The program should duplicate itself once the first month has been entered.

The answer "No" to "Are Actuals Correct?" after mis-entry is supposed to allow entry to a revision stage, but when I did it I found I could only exit by re-starting. The same answer to "Replace Forecast with Actual?" erased the forecast, and comparing the budget with actual is pointless if half the figures are missing.

Graphic representation of individual expenses and rolling budget feature. The reasonable price might make the problems bearable for those who are numerate. D.C.

instructions	80%
ease of use	50%
display	80%
value for money	75%



48K SPECTRUM OWNERS *Read This From* ...LET'S GET DOWN TO BUSINESS...



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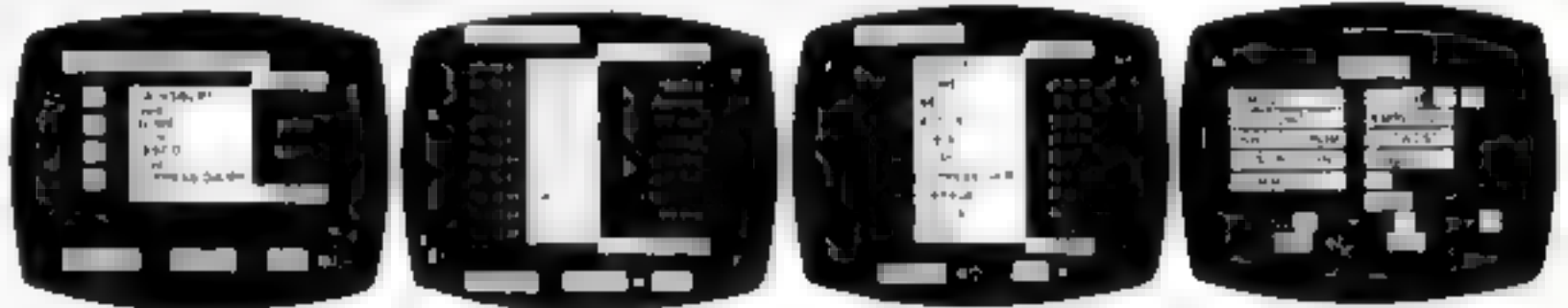
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These screens are just a sample to show the style of the program.

But that's not all, not by a long way. This program automatically raises a corresponding debit or credit for every entry, and will even open a new account if an entry features an unrecorded account name.

Information can be manipulated in various ways — you can call up your bank or credit card account, or analyse expenditure according to a variety of categories which you assign to the transactions. Instant Account balances can be listed at any time. A great time saving feature of this program is that account names and transaction descriptions need only be recorded **once**, as all the input fields will scroll existing files. There are many, many more features which make this the most powerful finance package around, we even include a test file for you to experiment with before getting started.



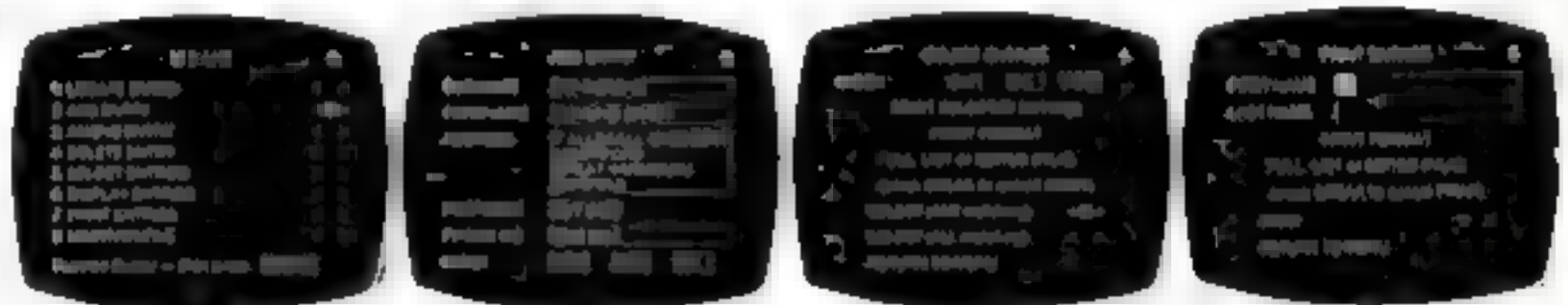
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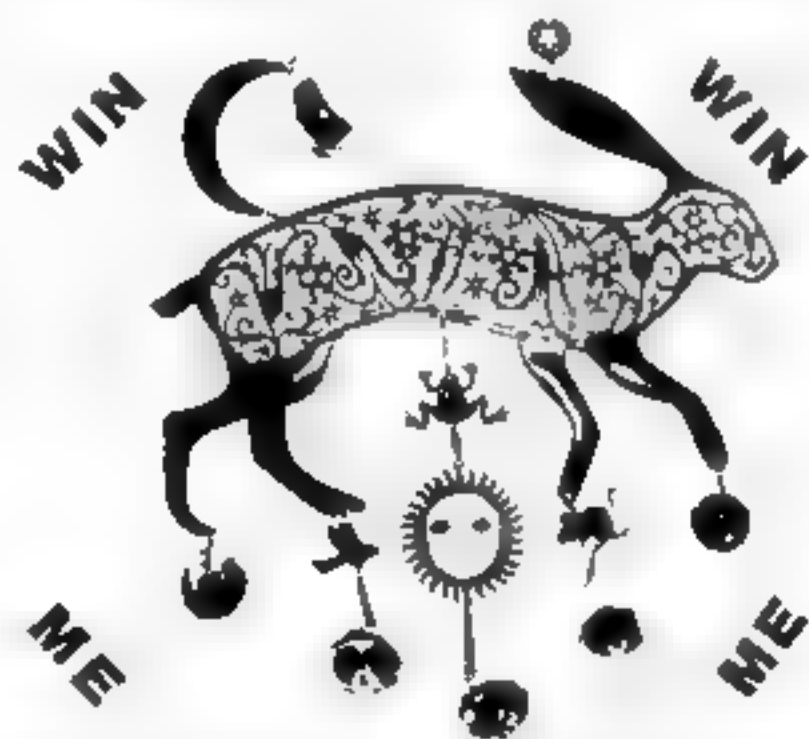
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ONE MAN'S VIEW

What's next for a ban?

It is generally accepted throughout the world that micro-technology is the field in which most of the future lies. Yet recent events — which occurred almost simultaneously — seem to suggest that the Establishment wishes to interfere with and directly control any advances made in this area.

The main event I speak of is, of course, the Ministry of Defence ban on JLC Data's software protection device.

The reason given for this was that it posed a threat to national security. Now, I'm only a 15-year-old schoolboy, but I don't think you'll consider my opinion too naive when I state that surely any enterprising criminal/Russian spy could get hold of this device, or at least adapt the permitted version (and make use of it), ban or no ban.

Surely then, considering that software houses have craved after such a device for years and the fact that it is a British product and would save the country millions from piracy, it would be best not to impose such a ban?

The only conclusion I can reach over this, then, is that the government wishes to stop the product (which can apparently be used down phone lines) from becoming generally available, giving them the ability to keep unrestricted tabs on the vast majority of us.

A recent Horizon programme, which many readers will have seen, dealt with exactly this subject and raised the question: "Given the choice of the government being able to listen in to all of us or none of us, which would you choose?"

They decided for none of us. The government itself, however, seems to think otherwise.

It is perhaps worth noting the security shindig which occurred at the GCHQ — a very sensitive area as far as bugging computer communications is concerned.

Now, I don't pretend for a minute to know how much of a threat its trade unions or whatever actually are, but the ban on them emphasises the already prominent question of what other restrictions Big Brother shall impose upon the computer industry in the name of National Security.

*Ian Mitchell
Ponderer of Random Thoughts
South Shields, Tyne and Wear*

● This space is for you to sound off about the micro scene, to present bouquets, to hurl brickbats, or just to share your opinions or experiences. Contributions from individuals earn a fee. Send your views to Paul Lipton, Editor, Home Computing Weekly, No.1 Golden Square, London W1R 3AB

AUC
32K BBC £5.99

Compusoft, 32 Watchyard Lane, Formby, Nr Liverpool L37 3JU

This game is in BASIC and takes ages to load. I leave you to decide whether it's worth it.

'This had better educate me', he thinks, looking at the price.

I imagine this program is designed for four- to five-year olds. The menu gives you the choice of games or work. This bit must be for the teacher. Any child who can read this is too bright for the questions. Being your usual hardworking type of person, I opted for the games.

The letter game involves pressing the letter shown on the screen. If you get it right the picture is drawn; if you're wrong then you get a load buzz. The

two other games are similar. Alphabet display involves pressing a key so that the corresponding letter and picture are drawn.

The instructions give no idea what happens if you are wrong. Small children may not understand. The pictures are reasonable but take a long time to draw. A child may be more patient but I'm sure would soon become bored.

I don't think many schools would be willing to spend £6 on a game of this quality. **D.B.**

instructions	60%
playability	80%
graphics	70%
value for money	40%



Music (7 +)
AUC SPECTRUM
£7.95

Argus Press Software, No.1 Golden Square, London W1R 3AB

There are two programs on side one, Piano Player and Composer, and one on side two, Musical Quiz.

Piano Player shows five black and seven white keys. The note played is depressed on screen while shown below, together with the octave and length of note (from 0.05 to 1 second) which may both be altered by four keys. Pressing z returns us to the menu — a useful facility.

Composer allows you to play a composed or demonstration tune, save, load or compose a

tune. For composition, using up to 1000 notes, screen top has five staves and notes of rest and note number. Nine keys allow choice of note, duration, rest or correction and playback.

In Musical Quiz, Clever Clogs asks 100 Grade One multiple choice questions, which may be altered. You start with a choice of six tunes, building up note by note at screen top with the correct answers. Clever Clogs smiles or grimaces, correct answers are shown and the tune plays at the end. **T.W.**

instructions	85%
ease of use	85%
display	90%
value for money	90%



Star Trucker
(9 +) 48K
Spectrum
£7.95

Argus Press Software, No.1 Golden Square, London W1R 3AB

An addictive learning game, a competition to win a year's magazine subscription and a Secret Parents' Page enabling questions to be reset: what more can Computertutor offer? Full use is made of the Spectrum's potential in this brainteasing game built around general knowledge questions.

A star-studded screen has a noisy rocket leaving 'welcome to Star Trucker' behind, followed by an invitation to enter a 'Christian' name: wouldn't 'first' name be more multicultural?

On screen is the view forward, above digital read-outs of time, score, credits, cargo, fuel, field and points. The first task is to manoeuvre through the asteroid belt to refuel at Earth with 100 credits. Credits and force field are topped up from points gained by correctly answering general knowledge questions.

A hyper-jump leads to the planet screen, where galactic dust guards the trading planets. Remembering what they exchange, you work out a route around the planets to end up with power gems. Disasters strike unexpectedly, robbing you of force field or credits, and you can be killed: if so, an official Star Trucker newflash tells the world. **T.W.**

instructions	90%
ease of use	90%
display	85%
value for money	88%



Back to school

Start the new term with these reviews of the latest in educational software

WIZARD WISE
AUC SPECTRUM
£6.95

Scisoft, 5 Minster Gardens, Newthorpe, Eastwood, Notts

A wizard program for teachers and parents who are eager to improve children's spelling and vocabulary on an individual basis. For the busy non-programmer it is the ideal answer, as it provides all the necessary cues to enter up to 10 sets of 10 words.

After each test there is a magic trick and then the set repeats if any were wrong, or a new one is set. A report card appears with name, score and comment, which may be printed. Then a top hat is shown, from which comes ten stars listing those

words spelt wrongly. Up to 45 names can be accepted — enough for a whole class — and up to ten sets of scores for each child.

It is a shame that this first-class program should be spoilt by the poor instructions in the accompanying booklet. Can anyone tell me how to reach the French vocabulary or general knowledge quiz? That aside, this program makes good use of the colour, sounds and graphics capabilities of the Spectrum, although they could have devised a means of escaping back to the menu. **T.W.**

instructions	50%
ease of use	70%
display	80%
value for money	85%



Chemistry 1
Election/DUC B
£6.90

Sunland, 204 High St West, Sunderland SR1 1UA

Sadly there are still many educational programmers who insist upon producing computer packages comprising rote learning better suited to simple teaching machines or crammers. This is such a package.

The program does not make use of the sophistication available on the BBC and the use of colour is appalling. Green sand! Red palm trees! Poor graphics, no variation of colour in printing; very poor layout, poor programming structure and one facility missing from this package, vital to non-programmers, is a simple method of changing data. Neither is there any protection against young fingers hitting escape or break.

The program has adequate but poorly laid out screen instructions and a total of 100 questions contained in four blocks of data. There is a choice of revision or three types of test on typical 'O' level chemistry exam questions. Answers to wrongly answered questions are displayed at the end of each test and an irrelevant picture is then displayed showing how close the user came to collecting a coconut.

A very unimaginative and tedious program suited to someone desperate to learn limited facts as quickly as possible.

instructions	60%
playability	80%
graphics	20%
value for money	20%



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3 Manic Miner	Software Projects	CBM 64 (-)
4 Atic Atac	Ultimate	Spectrum (3)
5 Scuba Dive	Durrell	Spectrum (2)
6 Jack & The Beanstalk	Thor	Spectrum (-)
7 Crazy Kong	Intega Micros	VIC-20 (-)
8 Moon Alert	Ocean	Spectrum (-)
9 Codename MAT	Micromega	Spectrum (7)
10 The Guardian	PSS	Spectrum (-)

NON-ARCADE

1 Fall of Rome	APS	Spectrum (-)
2 Golf 64	Abrasco	CBM 64 (2)
3 Fighter Pilot	Digital	Spectrum (-)
4 Flight Path 737	Anirog	CBM 64 (-)
5 Twin Kingdom Valley	Bug Byte	CBM 64 (1)
6 Colossus Chess	CDS	CBM 64 (-)
7 Star Trucker	Clever Clogs	Spectrum (-)
8 Test Match	CRL	Spectrum (-)
9 The Wizard & The Princess	Melbourne House	VIC-20 (-)
10 Pool	Bug Byte	Spectrum (-)

Compiled with the assistance of Britain's leading software distributors, including: Pinnacle, SDL, PCE, Websters, PCS and Software Centre.

SPECTRUM

1 Jet Set Willy	Software Projects (1)
2 Chequered Flag	Pslon (9)
3 Lunar Jetman	Ultimate (3)
4 Atic Atac	Durrell (2)
5 Scuba Dive	Richard Wilcox (-)
6 Jack & The Beanstalk	Ocean (4)
7 Hunchback	Thor (-)
8 Jack and the Beanstalk	Abbox (-)
9 Moon Alert	Ocean (-)
10 Codename MAT	Micromega (5)
11 The Guardian	PSS (8)

COMMODORE 64

1 Manic Miner	Software Projects (1)
2 Beach Buggy	Imagine (-)
3 Space Shuttle	Anirog (-)
4 Space Shuttle	Richard Wilcox (-)
5 Transylvanian Tower	K-Cell (7)
6 It's Only Rock	Commodore (-)
7 Intro to Basic	Virgin (-)
8 Revenge of the Mutant Camels	Llamosoft (9)

DRAGON 32

1 Chuckle Egg	Imagine (7)
2 Pedro	Microdeal (-)
3 Hungry Horace	Peaksoft (10)
4 Kriegspiel	Beyond (8)
5 Skramble	Microdeal (-)
6 S.A.S.	Peaksoft (10)
7 Up Periscope	Beyond (8)
8 Cuthbert in the Jungle	Microdeal (-)

Compiled by W. H. Smith and Websters. Figures in brackets are last week's positions.

VIC-20

1 Crazy Kong	Ultimate (10)
2 Sub Commander	Thorn EMI (2)
3 M.L.B.A.T.T.	Llamosoft (8)
4 Tank Commander	Thorn EMI (3)
5 Tower of Evil	Ultimate (10)
6 Snooker	Thorn EMI (4)
7 Tiny Tutor	Visions (5)
8 Gridrunner	Marketing Micro (-)
9 Gridrunner	Llamosoft (7)
10 Gridrunner	Thorn EMI (9)

BBC

1 737 Simulator	MRM (2)
2 Chess	BBC (5)
3 Killer	MRM (3)
4 Cortina	Precision Micro (7)
5 3D Munchy	MRM (4)
6 Demolacor	MRM (6)
7 Tank Attack	Gemini (-)
8 Dr Who 1st	BBC (-)
9 GB Ltd	Simon Hessel (8)

ZX81

1 Crazy Kong	PSS (1)
2 Sub Commander	Quicksilver (3)
3 M.L.B.A.T.T.	Sinclair (2)
4 Tank Commander	Sinclair (7)
5 Tower of Evil	Quicksilver (10)
6 Snooker	Sinclair (6)
7 Tiny Tutor	Quicksilver (8)
8 Gridrunner	Addictive Games (4)
9 Gridrunner	Quicksilver (9)
10 Invaders	Quicksilver (9)



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Most 64 owners will be aware how powerful the graphics capabilities of the machine are. There are several packages on the market for extending BASIC to use these capabilities and, in fact, David Rees described a do-it-yourself package in recent issues of Home Computing Weekly.

Most packages, David Rees' version included, have the disadvantage that although they offer a full range of facilities, they also tend to steal a large hunk of RAM. If you only want one or two bits of the package, they may prove impracticable.

In this article I shall describe some routines which, although they may be included in David's package, can be used on their own with a minimal overhead in RAM. The routines are all aimed at the use of graphics.

There seems to be a lot of inverted snobbery concerning high-resolution graphics. Whilst their use is ideal for graph plotting routines, they tend to be RAM hungry, often slow and do have some limitations. For example, can you create an animated drawing of a river using high-resolution graphics? It's easy using redefined characters! These routines will offer easy alternatives to hi-res. Whilst all routines operate independently, they can be used together.

The first routine gives pseudo teletext capabilities by enabling you to plot points and draw lines to a 80 by 50 resolution. Two simple commands are available.

To set or clear a point: SYS 49152,X,Y,Colour,Type. Type = 1 to set the point, type = 0 to clear the point.

To draw a line: SYS 49155,X1,Y1,X2,Y2,Colour,Type

Type
1 draw line
0 erase line

These routines assume that the screen memory is in its normal place. They will not work if you move the screen. For fast drawing, it is best to use the routines directly from machine code. For machine code hacks, I'll give details of the entry points later.

Listing 1 gives a BASIC loader for these routines. Demo 1 shows how they work.

Most computers have the option for user defined characters. The 64 is no exception and, true to form, there is no command for creating them. The next set of routines fill this gap.

The first problem is where to put the new characters. To

Great graphics which don't steal too much of YOUR RAM

Listing 1 — medium resolution plot

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Listing 2 — user-defined characters

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```

maintain compatibility with the plotting routines we are compelled to keep the screen in its normal place. To minimise loss of RAM, the new characters are put in a block from 2048 to 4095. To protect this area, we must shunt the start of BASIC up to 4096. There are two ways of doing this. First type in as a direct command the line:

```
POKE 44,16: POKE 256*16,0: NEW
```

As an alternative, a routine in this package can be used to do the job. Both of these methods will destroy any BASIC program in memory, so it is wise to do this job first. The call to protect the graphics is:

```
SYS 49926,X
```

If X has any value other than 255, the bottom of BASIC is simply raised. A value of 255 will auto load the next program on tape giving a means of booting a sequence of programs. The remainder of the commands are:

- 1 SYS 49920,SET
SET = 0 gives upper case.
SET = 1 gives lower case.

This routine switches in the new set and copies the specified characters from RAM to the new set. So that you know that all is well, a message is given when this command has finished. If you don't want the message to appear, e.g. in the middle of a program, poke location 1000 with 255.

- 2 SYS 49923 [N],B1,B2,B3, B4,B5,B6,B7,B8

This defines the shape of character N. The square brackets are used so that you can easily see which character is involved. The eight parameters specify the shape of the character.

- 3 SYS 49929., enable user defined set.
SYS 49932., disable user defined set.

These are simple switches to enable you to use text or redefined characters as required.

Listing 2 gives a BASIC loader for these routines. Try demo 2 to see what can be achieved with redefined characters. Look at Jeff Minter's Matrix or COSMI's Aztec Challenge to see what can be done with some cunning tricks.

The next block of routine,

COMMODORE 64 PROGRAMMING

Listing 3, is of more limited value but can be linked with the plotting routines to produce billboard type displays. The routine draws a large character at a specified position on the screen. The characters generated are macros built up from the standard CBM characters and are four characters high and four characters wide. Any of the numbers or alphabet are available. The routine is called with:

SYS 50432,X,Y,CH,COLOUR

where Y is the row where the top left hand corner of the character starts (0-24); X is the column where the character starts (0-39); CH is the ASCII value of the character (eg CH = ASC("A")); COLOUR is the colour of the character.

The final set of routines give a full range of scroll and roll routines. The scroll routines move the screen one character in the required direction and put a blank line at the other end of the screen. Roll moves the screen contents and puts the lost line at the other end of the screen (similar to a continuous conveyor belt). Both the screen and colour memories are scrolled so that the appearance of the screen is preserved.

The routines are called by:

Listing 3 — large 4 x 4 characters

```
20 REM
30 REM
40 DATA 32 253 174 32 130 173 32 247 193 165 20 141 134 3 32 253 174 32 130
50 DATA 73 32 247 187 6 20 14 170 3 32 253 174 32 30 173 32 247 183 63
60 DATA 141 122 3 32 253 174 32 130 173 32 247 183 63 20 14 134 2 173 132
70 DATA 201 31 16 47 181 47 48 43 56 271 46 4 32 3 174 35 3 72 134 3
80 DATA 24 32 248 251 72 32 3 87 1 37 33 251 95 134 97 133 242 68
90 DATA 77 25 201 64 248 6 32 2 2 255 200 220 244 96 146 179 194 2 2 240
100 DATA 48 73 90 123 56 57 50 159 162 61 162 197 229 7 36 67 90 169 48
110 DATA 74 93 2 2 275 270 25 64 85 21 152 82 209 227 4 37 60 99 21 230
120 DATA 220 220 200 20 201 20 20 20 20 20 20 20 22 22 22 197
130 DATA 97 195 99 199 90 90 90 90 90 90 90 99 99 99 99 99 99
140 DATA 39 39 39 200 202 202 222 222 172 8 61 46 87 7 157 57 57 1
150 DATA 12 9 6 17 17 17 57 57 72 52 87 17 157 57 27 46 51 32 9 6
160 DATA 146 64 8 172 62 146 14 7 87 87 157 18 80 146 162 18 19 17 157
170 DATA 57 57 46 16 38 18 16 17 157 157 157 108 146 62 8 9 16 64
180 DATA 72 8 162 46 191 7 147 157 57 16 32 72 7 57 57 57 16 32 32
190 DATA 71 47 57 57 100 102 8 91 46 64 8 72 62 146 3 7 57 107 57 157
200 DATA 47 6 72 8 6 7 57 157 157 146 61 32 8 61 7 37 37 57 100
210 DATA 146 162 190 64 8 172 64 52 17 187 87 87 90 146 62 7 147 57
220 DATA 61 17 57 8 88 45 62 62 64 8 172 62 62 7 57 47 47 42
230 DATA 46 62 17 87 87 6 17 87 6 64 72 8 62 46 9 17 47 57
240 DATA 57 161 32 32 7 157 157 157 61 32 18 97 46 7 57 57 57 99 62
250 DATA 8 191 146 64 6 72 18 6 17 87 87 15 80 146 62 18 191 7
260 DATA 97 157 157 46 16 32 8 16 146 17 87 57 157 146 16 18 62 16 17 57 157
270 DATA 20 99 19 72 46 17 57 16 17 157 6 17 157 157 72 8 80 46
280 DATA 29 88 18 72 17 57 146 8 17 57 6 7 87 157 87 9 62 190
290 DATA 4 32 18 8 17 87 87 99 91 17 157 87 172 46 19 7 47
300 DATA 57 61 32 9 64 6 17 47 16 7 147 61 7 157 18 88 46 62 162
310 DATA 4 90 146 32 8 190 7 57 57 157 146 16 18 62 16 17 57 157
320 DATA 57 146 161 32 8 6 7 87 87 157 46 16 32 8 61 146 64 18 80
330 DATA 146 32 8 16 46 17 157 57 47 6 16 8 61 46 7 47 157 87
340 DATA 4 19 61 4 46 17 57 157 6 32 18 107 66 64 172 18 162 46
350 DATA 57 1 57 157 157 16 32 8 61 46 7 147 87 87 6 32 18 6 146
360 DATA 7 47 57 87 188 61 30 64 8 72 62 146 3 7 57 107 87 8
370 DATA 90 146 62 18 9 7 57 47 57 146 6 17 157 46 16 64 72 8
380 DATA 62 46 87 17 157 157 157 61 32 18 61 146 17 187 187 16 72
390 DATA 8 16 146 7 57 157 87 88 42 19 64 18 72 62 46 9 7 57
400 DATA 47 47 90 46 62 8 9 7 47 47 47 44 16 4 7 87 47
410 DATA 46 132 9 44 8 9 62 46 91 7 157 157 137 19 107 17 137
420 DATA 57 32 88 91 7 157 157 9 154 8 191 146 64 68 18 8 62
430 DATA 7 47 47 46 8 61 7 147 16 1 87 6 146 64 6 32 8 161 146
440 DATA 7 87 57 157 16 32 18 4 44 7 47 47 47 16 32 8 16 46 7
450 DATA 87 87 187 91 62 18 9 46 64 16 32 18 16 146 7 47 47 47
460 DATA 61 32 18 161 146 17 187 41 57 6 32 8 6 46 7 47 47 47 88
470 DATA 61 90 64 6 72 4 16 46 7 57 87 47 16 32 8 2 46 7 87
480 DATA 8 87 6 46 4 17 47 87 157 172 146 34 6 87 146 64 6
490 DATA 12 16 16 146 7 57 157 157 80 162 90 17 87 157 87 72 8 62
500 DATA 46 87 7 87 87 87 16 32 8 6 46 44 8 16 46 32 16 16 146
510 DATA 7 157 57 19 30 17 187 18 87 6 7 87 4 46 64 18 164 64 6
520 DATA 47 57 147 72 90 7 47 157 87 172 90 7 87 57 16 40 46
530 DATA 62 162 64 18 9 162 46 4 7 187 87 4 20 4 14 7 47 87
540 DATA 47 146 4 23 12 4 7 57 87 46 4 62 8 19 146 64 1 6
550 DATA 49 1 87 6 7 87 4 187 90 46 187 64 9 9 62 46 19
560 DATA 7 47 6 19 7 157 187 19 17 157 30 46 4 6 44 8 7 42
570 DATA 146 41 47 87 162 8 4 7 47 4 7 47 87 147 46 4 1
```

- scroll down SYS 52742
- roll down SYS 51826
- scroll left SYS 52123
- roll left SYS 52182
- scroll right SYS 51992
- roll right SYS 52049

The contents of location 901 specifies the number of rows scrolled or rolled to the left or right. It has no effect on the scroll and roll down. Listings 4 and 5 load these routines. The listings can be used independently. Demo 4 incorporates many of these routines to show what is possible.

Machine code aspects of low-res plot: The interfacing of the plotting routines to your own machine code routines is a simple matter:

Point plot:
X in location 900
Y in location 901
Colour in 786
Point type in 906
Entry point \$C006

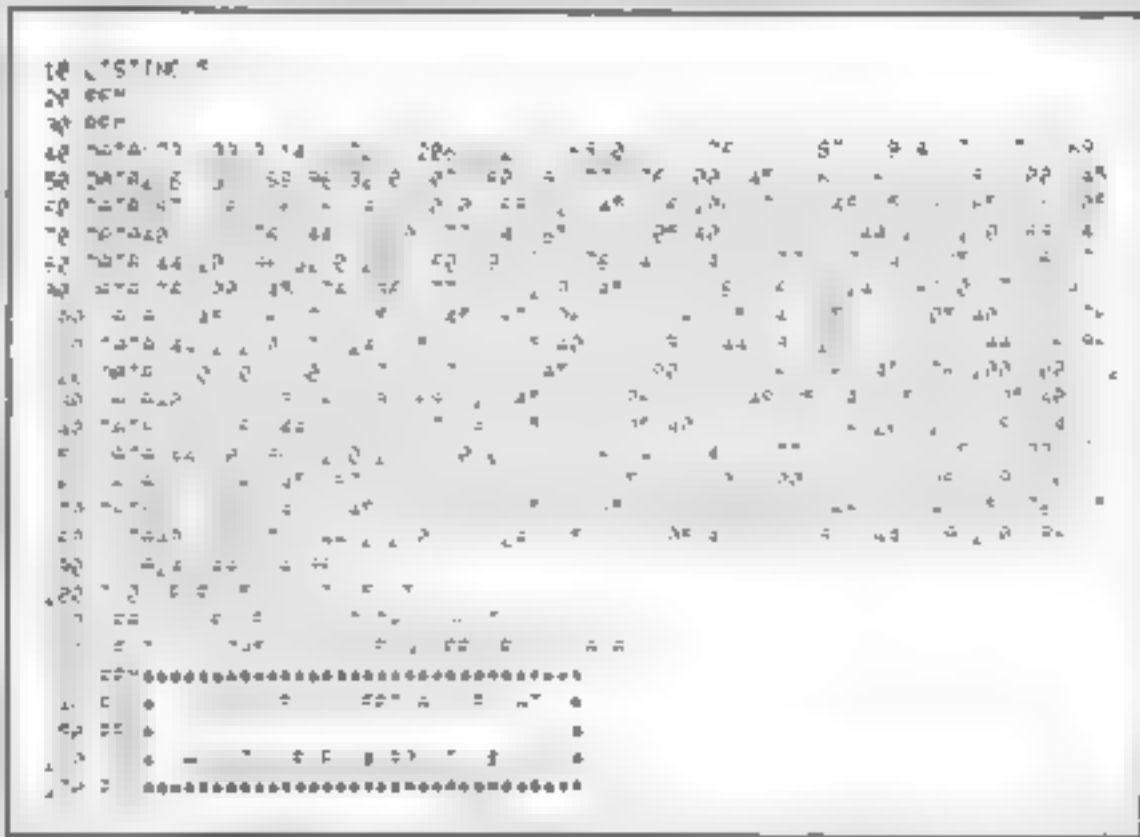
Line plot:
X1 in 902
Y1 in 903
X2 in 904
Y2 in 905
Colour in 786
Line type in 907
Entry Point \$C0D1

```
490 DATA 91 146 64 29 18 91 146 41 7 147 87 147 8 91 24 146 4 17
500 DATA 87 87 57 8 180 146 162 8 91 17 14 146 16 64 16 12 42 42
510 DATA 7 47 187 157 100 146 42 87 7 87 4 4 1 87 87 87 84 8
520 DATA 42 4 191 44 64 8 9 64 146 81 7 87 187 87 0 62 24 4
530 DATA 46 44 18 6 62 97 17 157 19 1 157 7 0 4 7 87 4 16 14
540 DATA 8 19 162 46 19 7 87 87 47 4 42 4 9 9 87 47 87 44
550 DATA 4 2 8 4 7 147 87 87 46 8 4 3 46 64 4 4 46 46
560 DATA 41 7 87 87 4 29 18 6 7 5 187 4 46 64 4 14 47
570 DATA 157 57 147 46 14 62 18 91 46 64 14 64 64 14 64 14
580 REM *****
590 REM *****
600 REM *****
610 REM *****
620 REM *****
630 REM *****
```

Listing 4 -- scroll and roll down

```
10 LISTING 4
20 REM
30 REM
40 DATA 49 02 33 176 33 87 69 82 33 22 73 85 64 44 33 3
50 DATA 69 2 9 133 89 33 80 69 24 4 3 34 36 34 3 134 47 65 32 2
60 DATA 45 176 177 129 148 87 16 6 248 226 2 91 48 47 57 43 74 48
70 DATA 16 133 177 155 49 127 84 68 90 2 31 48 49 51 2 42 14 20
80 DATA 44 4 221 8 77 9 86 65 89 33 42 49 22 5 3 74 92
90 DATA 24 44 47 42 20 60 2 1 1 4 9 4 1 2 48 76 66 6
100 DATA 96 88 39 85 92 7 53 60 7 49 85 2 3 87 1 48 85 2 3 87 1
110 DATA 282 42 70 77 82 48 76 77 72 48 9 4 1 48 85 2 3 87 1
120 DATA 49 82 1 74 49 4 7 1 16 43 4 1 48 85 2 3 87 1
130 DATA 87 80 237 42 73 82 4 8 63 8 31 4 85 48 65 40 3
140 DATA 99 165 50 233 8 73 22 54 44 81 83 4 8 2 4 24 26
150 DATA 47 0 1 6 1 6 1 24 96
160 REM *****
170 READ X,Y,CH,COLOUR
180 IF Y=24 THEN PR "Y = 24"
190 REM *****
200 REM *****
210 REM *****
220 REM *****
230 REM *****
240 REM *****
```

Listing 5 — scroll/roll left and right



Why use a big graphics program when you're only going to use parts of it?

These routines, by HCW regular Allen Webb, are fast memory-efficient alternatives

COMMODORE 64 PROGRAMMING

```

10 DEM DEMO TEST 1
20 GOTO 100
30 PRINT "LOW RESOLUTION PLOT"
40 GOTO 100
50 FOR A=0 TO 255
60 FOR B=0 TO 255
70 FOR C=0 TO 255
80 FOR D=0 TO 255
90 FOR E=0 TO 255
100 GOTO 100
110 GOTO 100
120 GOTO 100
130 GOTO 100
140 GOTO 100
150 GOTO 100
160 GOTO 100
170 GOTO 100
180 GOTO 100
190 GOTO 100
200 GOTO 100
210 GOTO 100
220 GOTO 100
230 GOTO 100
240 GOTO 100
250 GOTO 100
260 GOTO 100
270 GOTO 100
280 GOTO 100
290 GOTO 100
300 GOTO 100

```

Demonstration 1 — low resolution plotting



```

10 DEM DEMONSTRATION 2
20 GOTO 100
30 PRINT "USER-DEFINED CHARACTERS"
40 GOTO 100
50 PRINT "*****"
60 PRINT "*****"
70 PRINT "*****"
80 PRINT "*****"
90 PRINT "*****"
100 GOTO 100
110 GOTO 100
120 GOTO 100
130 GOTO 100
140 GOTO 100
150 GOTO 100
160 GOTO 100
170 GOTO 100
180 GOTO 100
190 GOTO 100
200 GOTO 100
210 GOTO 100
220 GOTO 100
230 GOTO 100
240 GOTO 100
250 GOTO 100
260 GOTO 100
270 GOTO 100
280 GOTO 100
290 GOTO 100
300 GOTO 100

```

Demonstration 2 — user-defined characters

```

10 DEM DEMO TEST 3
20 GOTO 100
30 PRINT "4x4 CHARACTERS"
40 GOTO 100
50 PRINT "*****"
60 PRINT "*****"
70 PRINT "*****"
80 PRINT "*****"
90 PRINT "*****"
100 GOTO 100
110 GOTO 100
120 GOTO 100
130 GOTO 100
140 GOTO 100
150 GOTO 100
160 GOTO 100
170 GOTO 100
180 GOTO 100
190 GOTO 100
200 GOTO 100
210 GOTO 100
220 GOTO 100
230 GOTO 100
240 GOTO 100
250 GOTO 100
260 GOTO 100
270 GOTO 100
280 GOTO 100
290 GOTO 100
300 GOTO 100

```

Demonstration 3 — use of 4 x 4 characters

```

10 DEM DEMO TEST 4
20 GOTO 100
30 PRINT "SCROLLS AND ROLLS"
40 GOTO 100
50 PRINT "*****"
60 PRINT "*****"
70 PRINT "*****"
80 PRINT "*****"
90 PRINT "*****"
100 GOTO 100
110 GOTO 100
120 GOTO 100
130 GOTO 100
140 GOTO 100
150 GOTO 100
160 GOTO 100
170 GOTO 100
180 GOTO 100
190 GOTO 100
200 GOTO 100
210 GOTO 100
220 GOTO 100
230 GOTO 100
240 GOTO 100
250 GOTO 100
260 GOTO 100
270 GOTO 100
280 GOTO 100
290 GOTO 100
300 GOTO 100

```

Demonstration 4 — scrolls and rolls

COEMIC KIDNAP 12K BBC £7.95

Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX

This is a complicated take-off of one of the oldest arcade games, Space Invaders. The lower section of the screen remains the same, but the marching intruders have been scrapped to be replaced by funny blue things (cronies). The mother ship has stayed, but there are now three alien captives in the middle of the screen, surrounded by a tough red wall.

It is your job as the Autoguard to stop the cronies dismantling the wall and so rescuing your prisoners.

You can lose one of your three

lives by being hit by one of the bombs dropped from above, or if a prisoner is freed by a cony.

The normal left, right and fire controls are used and as soon as you have blasted all the cronies from one screen you immediately move to the next. From the third screen onwards you are often confronted with a menacing creature called the bug. He must be hit in a specific place and is worth 10 times more points than the cronies.

A definite must for all 'shoot 'em out of the sky' fans. M.B.

instructions	70%
playability	60%
graphics	60%
value for money	70%



Dragon Attack Sord M5 £19.95

Computer Games, CGL House, Goldings Hill, Loughton, Essex IG10 2RR

In this game you are a fighter robot and you must move right or left and fire missiles at dragons or UFOs. If you are hit by fire from the dragon, or if the dragon moves to the base of the screen you are knocked out. You can hide below shelters which gradually crumble under the fire of the dragons.

All this may sound strangely familiar and so it should. Dragon Attack is a souped-up version of the now out-dated game of Space Invaders. Dragons, not invaders, descend

in centipede fashion. One modification is that if a dragon is hit in the head, it will be completely knocked out; however, if it is hit in the torso, the torso disappears and the dragon divides into two. Tactics are therefore necessary.

Graphics and animation are adequate and the sound is good. However this type of game is now totally out of date, and I can't see people flocking to buy this. S.S.

instructions	80%
playability	60%
graphics	65%
value for money	60%



COEMIC ARCADE Dragon £12.95

Dragon Data, Kenfig Industrial Estate, Margam, Port Talbot, West Glam SA13 2PE

A machine code arcade game which to my mind closely resembles Space Invaders.

The enemy space craft progress in formation from the top of the screen dropping bombs as they go. If you do not shoot them first they can leave the formation to attack you. Movement to left and right is controlled by the joystick and the fire button shoots the missiles. There is nowhere to hide on the screen. You must keep on shooting and running until all your lives are lost.

The aliens come in three varieties. The score for each is doubled if you can hit it once it has left the formation.

Bonus points are awarded if a formation is completely destroyed. Another wave then appears. An extra ship is gained for every six convoys destroyed.

The screen display is adequate if unexciting. One of the aliens looks to me like a flying bowtie. The game loaded without any problems. The packaging is elaborate and concise. Instructions come in a small booklet.

A reasonable game of Space Invaders but I have seen more interesting versions. J.F.M.

instructions	60%
playability	60%
graphics	65%
value for money	60%



Blow up tanks, shoot down aliens!

Old favourites are adapted, with new modifications. See what our team of reviewers think

Tank Battalion Sord M5 £23.95

Computer Games, CGL House, Golding Hill, Loughton, Essex IG10 2RR

This is a game in which you control a tank in the middle of a battlefield. Enemy tanks slowly advance towards their goal — command headquarters. Your job is to defend by destroying the enemy tanks as they approach and so goes the accompanying informative instruction booklet.

Sounds exciting, doesn't it? Well, I'm afraid that Tank Battalion is nowhere near as exciting as it sounds. Basically, you take pot shots at the enemy tanks as they ramble around the screen and if you manage to destroy 20 before they blow up

the command headquarters, which incidentally is represented as a flower, you go on to the next screen to do the whole thing all over again.

Your tank is a simple character, not a sprite, resembling a tank and the enemy tanks are just the same apart from their colour. Sound isn't very exciting either. There are some nice touches to this game, such as different street patterns for successive screens, realistic explosions, two players option and nice tunes, but at £23.95, I honestly can't recommend it.

instructions	90%
playability	60%
graphics	40%
value for money	40%



Johnny Reb Dragon 32/ Tandy Colour £6.95

Lothlorien, 56a Park Lane, Poynton, Cheshire, SK12 1AB

From the makers of specialist Battle Games comes this simulation of the American civil war. There are two versions on one tape, one for the Dragon and the other for its near cousin the CoCo.

The game is one of strategy and there are many options for you to ponder over. The first is quite easy: do you wish to play the computer or another human being? After that they become more difficult.

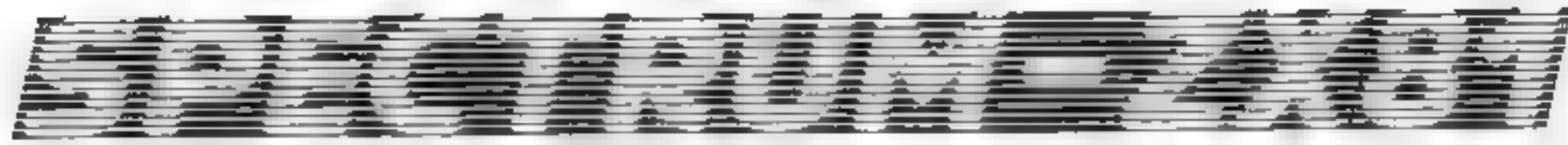
You can set the game to a fixed number of moves: this means that games need not take too long and you have a result at the end. Then you must choose the size and composition of your army for the battle.

The battlefield is made up of different vegetation and a river with each unit. Any units which touch are in conflict and the computer decides the outcome. The game is visually good and very clear, as are the movement routines. I cannot judge how accurate the tactical adjustments are but I have enjoyed playing the game and will do so again. D.C.

instructions	90%
playability	90%
graphics	90%
value for money	95%

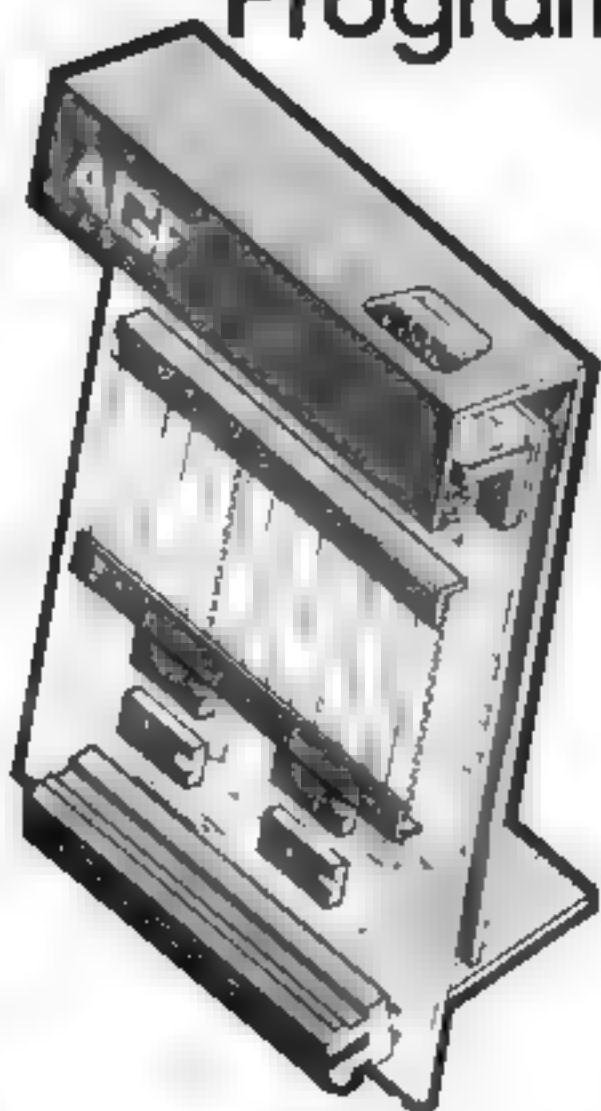


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Make your micro make music

In this fairly short program you can play the notes within a given octave using the letters as shown on the screen.

As a tune is played the music is stored in the array X(X) and you can play it back later by pressing Y.

These are the keys for entering music:

S D G H J
Z X C V B N M

And these are the operational keys:

Q alters the octave (0-6), followed by 1 to lower or 2 to increase. Space bar returns you to entering music

W change the length of the note, followed by 1 to shorten duration or 2 to lengthen it. Space bar returns you to the menu

E ends the program

R allows you to alter the envelope shape, 1 to lower and 2 to increase the number

T alters the envelope period, again followed by 1 to shorten and 2 to increase

I have tried to keep the program fairly short and in order to do so I have only used one of the four available sound channels.

In addition, you can only

```

1 REM ** SYNTHESISER **
2 REM ** A PROGRAM FOR THE ORIC 1 --WORKS IN 16K AND 4
BK MACHINES **
3 REM ** WITHOUT ALTERATIONS **
4 REM
5 REM ** S.W. LUCAS **
10 TEXT:GRAB:PAPER7:INK4
12 PRINTCHR$(6):REM TURN OFF KEY CLICK
13 PRINTCHR$(17):REM TURN OFF CURSOR
15 DIMX(1000):REM USED TO STORE MUSIC - MAKE LARGER IF
YOU HAVE 48K
17 CLS
20 GOSUB1000:REM SET SCREEN DISPLAY
25 B=20:C=3:D=5:E=200:Y=1
30 GOSUB2000:REM GET NOTE AND PLAY IT!
40 IFA$="Q"THENGOSUB3000:GOTO30:REM CHANGE OCTAVE
50 IFA$="W"THENGOSUB4000:GOTO30:REM CHANGE DURATION
60 IFA$="E"THENCLS:PLOT10,15,"THANK YOU FOR PLAYING":P
RINTCHR$(6)CHR$(17):END
70 IFA$="R"THENGOSUB5000:GOTO30:REM CHANGE ENVELOPE
80 IFA$="T"THENGOSUB6000:GOTO30
90 IFA$="Y"THENGOSUB10000:GOTO30:REM REPLAY MUSIC
999 END
1000 FORX=20TO25:PLOT0,X,17:PLOT1,X,7:PLOT38,X,23:NEXT
1010 PLOT3,24,"Z   X   C   V   B   N   M"
1020 PLOT5,22,"S   D           G   H   J"
1030 PLOT14,16,"KEYS USED"
1040 PLOT3,19,"C   D   E   F   G   A   B"
1050 PLOT12,18,"for the notes:-"
1055 PLOT1,14,1:PLOT2,14,"           S. W. Lucas"
1060 FORX=1TO2:PLOT10,X,X*2:PLOT11,X,14:PLOT12,X,"Mini
synth":NEXT
1500 RETURN
2000 PLOT30,4,"KEYS":PLOT25,5,"Q= octave":PLOT25,6,"W=
note length"
2001 PLOT25,7,"E= end program":PLOT25,8,"R= envelope"
2002 PLOT25,9,"T= period"
2003 PLOT23,10,"Y= replay music"
2004 REPEAT
2005 A=0
2030 GETA$:REM SET VALUE OF A FOR NOTE BEING PLAYED
2040 IFA$="Z"THENA=1 ELSEIFA$="X"THENA=3 ELSEIFA$="C"
HENA=5
2050 IFA$="V"THENA=6 ELSEIFA$="B"THENA=8 ELSEIFA$="N"
HENA=10
2060 IFA$="M"THENA=12
    
```

Turn your Oric into a musical instrument and play back your masterpieces. Steve Lucas wrote his synthesiser program for 16K or 48K models

ORIC PROGRAM

```

2070 IFA$="S" THEN A=2 ELSE IFA$="D" THEN A=4 ELSE IFA$="G"
HENA-7
2080 IFA$="H" THEN A=9 ELSE IFA$="J" THEN A=11
2090 IFA<>0 THEN MUSIC1,C,A,0:PLAY3,0,0,E
2095 Y=Y+1:REM INCREMENT NOTE
2097 X(Y)=A:REM ADD NOTE TO SAVED MUSIC
2100 WAITB
2110 PLAY0,0,0,0
2500 UNTIL A$="0" OR A$="W" OR A$="E" OR A$="R" OR A$="T":GOTO 2070
2510 RETURN
3000 PLOT30,4,"":PLOT25,5,"":PLOT25,6,""
3001 PLOT25,7,"":PLOT25,8,""
PLOT25,9,""
3009 PLOT10,4,"CHANGE OCTAVE"
3010 PLOT10,5,"lower=1 higher=2"
3020 PLOT9,6,"press <space bar> when ready"
3025 REPEAT: F=LY$
3040 IFF$="1" THEN C=C-1 ELSE IFF$="2" THEN C=C+1
3050 IF C<=0 THEN C=0
3060 IF C>=6 THEN C=6:REM C=OCTAVE NUMBER
3065 PLOT10,8,"OCTAVE No: -"
3066 PLOT20,8,STR$(C)
3070 UNTIL F$=" "
3080 PLOT10,4,""
3090 PLOT10,5,""
3100 PLOT9,6,""
3110 PLOT9,8,""
3120 RETURN
4000 PLOT30,4,"":PLOT25,5,"":PLOT25,6,""
4001 PLOT25,7,"":PLOT25,8,""
PLOT25,9,""
4009 PLOT10,4,"CHANGE OCTAVE"
4010 PLOT10,5,"lower=1 higher=2"
4020 PLOT9,6,"press <space bar> when ready"
4025 REPEAT: F=LY$
4040 IFF$="1" THEN B=B-1 ELSE IFF$="2" THEN B=B+1
4050 IF B<=0 THEN B=0
4060 IF B>=70 THEN B=70
4065 PLOT10,8,"DURATION:"
4066 PLOT20,8,STR$(B)
4070 UNTIL F$=" "
4080 PLOT10,4,""
4090 PLOT10,5,""
4100 PLOT9,6,""

```

How it works

- 10 sets colours of screen and text mode: GRAB allows the program to use the hi-res screen memory area
- 12-13 turn off key click and cursor
- 15 DIMensions array X — used to store musical notes
- 20 calls screen display subroutine (lines 1000-1500)
- 25 sets default values of variables
- 30 calls subroutine at 2000-2510 which is the main routine for entering music
- 40 calls octave change subroutine, lines 3000-3120
- 50 calls note duration subroutine, lines 4000-4120
- 60 ends program when E is entered
- 70 calls envelope change routine, lines 5000-5210
- 80 calls routine to alter the envelope rise/decay times, lines 6000-6800
- 90 calls the REPLAY subroutine lines 10000-10060
- 1000-4100 subroutines called by lines above

store 1,000 notes in array X before an error occurs. This is to make it compatible with the 16K Oric. If you want to write longer pieces you must increase the DIM statement in line 15.

Main variables

- X(X) musical notes written
- NS key pressed
- A note
- B duration of WAIT command
- C octave
- D envelope mode
- F envelope period
- Y number of notes in array

Note: Use the space bar, or any other key, for a pause. I would recommend that you write the music and then alter the envelopes to investigate the different effects.

ORIC-1



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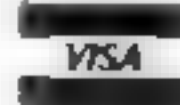
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